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CRIMINAL JUSTICE

NEW TECHNOLOGIES AND THE CONSTITUTION

SPECIAL REPORT

CONGRESS OF THE UNITED STATES OFFICE OF TECHNOLOGY ASSESSMENT

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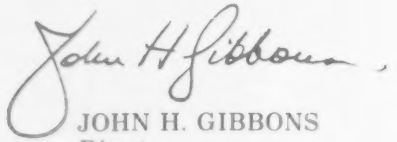
Foreword

In honor of the Bicentennial of the United States Constitution, OTA is conducting a study of Science, Technology, and the Constitution. At the request of the Committee on the Judiciary of the House of Representatives, and its Subcommittee on Courts, Civil Liberties and the Administration of Justice, OTA is examining ways in which continuing scientific advances and new technological developments may influence the scope and meaning of enduring constitutional principles and protections. A background paper, *Science, Technology, and the Constitution,* was released in September 1987. The first of several special reports, *Science, Technology, and the First Amendment,* was released in January 1988.

Articles I and III of the Constitution and four of the ten amendments in the Bill of Rights address the rights of those suspected, accused, or convicted of crime. This report, *Criminal Justice, New Technology, and the Constitution,* looks at new technologies used for investigation, apprehension, and confinement of offenders, and their effects on the constitutional protection of these rights.

These technological innovations offer social benefits that respond to the current pressures for reduction of crime, the just and equitable administration of justice, and relief of prison overcrowding. However, technology throughout history has been a double-edged sword, equally capable of enhancing or endangering democratic values. This report describes the new technologies being used in criminal justice and, as in all of the reports of this series, addresses that delicate balance to be maintained between the national interest and individual rights.



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Chapter 1

Technology and Rights in Criminal Justice

THE TECHNOLOGICAL REVOLUTION IN CRIMINAL JUSTICE

As recently as the 1960s, criminal justice institutions lagged far behind business and Federal Government agencies in adopting new technology.[1] Then, in 1967, the President's Commission on Law Enforcement and Administration of Justice made sweeping recommendations for modernizing the administration of criminal justice with new technologies.[2] The technological innovations that followed in the next two decades have transformed nearly every component of the criminal justice system.[3]

This technological transformation is continuing. Advanced technology, growing directly out of recent developments in basic science, is finding immediate application in the investigation of crime—for example, DNA typing. New technologies are also used in trials and in judicial decisionmaking—for example, computer models based on social science research are used in assessing the likelihood of recidivism. Finally, new technologies such as electronic bracelets are being used in corrections. Others, such as hormonal therapy for sex offenders, are being tested in experimental programs.

Three categories of scientific knowledge appear most promising for criminal justice, in terms of the technological capabilities that they can provide. In criminal justice applications, these three areas of science and technology converge and complement each other.

The first is information science, already providing the criminal justice system with a broad array of computer and telecommunications technologies. Surveillance technology can enhance the investigation of crime. Computers will offer nearly unlimited possibilities for aggregating information and sharing it with other criminal justice agencies. They can also be used to model or simulate the outcomes of alternative prevention and correction strategies.

The second important field is molecular biology (sometimes called "New Biology"). Studies of the chemical and genetic basis of human behavior or mental functioning promise new techniques for identification, testing, and screening, using body fluids or tissues. They may also become the basis of behavior modification or control.

The third field is social science research, still relatively underdeveloped by comparison with physical and biological sciences, but increasingly being used to build statistical and behavioral models and decision guidelines.

Each has a dark side, an aspect of social cost or social risk. Information technologies, for example, can lead to gross violations of individual privacy. The use of molecular biology to substitute "treatment for behavior disorders" for "punishment for criminal actions" is a profound change in the paradigms of social control. It brings into question the assumption of individual responsibility for behavior, which is one of the underlying principles of constitutional government. Social science models are constructed from data on populations or large groups of people. If used to predict individual behavior in making decisions about probation or sentencing, they could reinforce discriminatory stereotypes and penalize people who are

[1]Much of the material in this report draws on SEARCH Group, Inc., "New Technologies in Criminal Justice: An Appraisal," David J. Roberts and Judith A. Ryder, Principal Authors, a contractor report prepared for the Office of Technology Assessment, March 1987.

[2]The President's Commission on Law Enforcement and Administration of Justice, *The Challenge of Crime in a Free Society* (Washington, DC: U.S. Government Printing Office, 1967), pp. 244-271.

[3]To assist criminal justice professionals in selecting technologies suited to their needs, the National Institute of Justice established the Technology Assessment Program (TAP). TAP is responsible for coordinating equipment testing, compiling and disseminating test results, and operating a reference and referral center. An Advisory Council recommends directions for future standards and tests.

poor, undereducated, or members of minorities. Under some circumstances, social science predictions of recidivism could result in decisions that approach being punishment in anticipation of crime.

In evaluating new and emerging technologies for use in criminal justice, one aspect that is sometimes overlooked is the possibility that they may affect the constitutional rights of those suspected, accused, or convicted of crime. For example, the development of wiretapping technology for the detection and investigation of crime resulted in several decades of uncertainty as to whether wiretapping without a judicial warrant was "an unreasonable search and seizure" in violation of the Fourth Amendment. It required repeated actions by both the Supreme Court and the Congress to fully resolve this uncertainty.

More recent technological innovations in law enforcement and criminal justice are likely to result in similar challenges to their constitutionality. One can anticipate some of these challenges by considering potential innovations in comparison with earlier innovations, and in the context of continuing trends in constitutional interpretation. Legislators and criminal justice administrators may then be able to shape the use of technology in ways that more clearly avoid infringing on constitutional rights.

CRIMINAL JUSTICE AND CONSTITUTIONAL PROTECTIONS

Articles I and III of the U.S. Constitution and 4 of the 10 amendments in the Bill of Rights address the rights of those suspected, accused, or convicted of crime. The Fourth, Fifth, Sixth, and Eighth Amendments include prohibitions against unreasonable searches and seizures (of evidence), double jeopardy, and forced self-incrimination; the guarantees of the rights to grand jury indictment, trial by jury, confrontation of witnesses, and calling of defense witnesses; and the far-reaching requirement of due process in criminal justice proceedings.

The writers of the U.S. Constitution were acutely aware that tyrannical governments had often used accusations of crime to rid themselves of political dissidents. They recognized also that in punishing crime, the state most directly and forcefully intervenes to take the life, liberty, or property of its citizens. Respect for the rights of even the most despicable violators of law and social order has been a fundamental cornerstone of American criminal justice, in theory if not always in practice. When, therefore, new scientific knowledge or new technological capabilities are brought into the service of law enforcement, it is right and necessary to inquire into their possible effects on constitutional safeguards. To begin that inquiry, it will be helpful to review briefly what those safeguards are.

Throughout the following discussion, reference will be made to the 14th Amendment, which is not part of the Bill of Rights. The 14th Amendment, ratified in 1868, provided that all persons born in this country (or later naturalized) are citizens of the United States and of the State in which they live. This was intended to protect former slaves and their descendents. The Amendment then says that:

> No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws.

Until 1868 the prohibitions and protections of the Bill of Rights restrained only the Federal Government.[4] Even after the 14th Amendment, the Supreme Court ruled in 1873 that most of the basic civil rights were not

[4]Most of the State constitutions also had Bills of Rights, but the Federal courts could not enforce these if State courts failed to do so.

privileges or immunities of U.S. citizenship, but resulted from State citizenship.[5] This meant that the 14th Amendment still did not subject the State governments to the restraints of the first 10 amendments. Instead, the Supreme Court used the 14th Amendment's Due Process Clause to protect the property rights of "corporate persons" by striking down a series of State laws aimed at improving working conditions.

Over the last four decades, however, the Supreme Court has reconsidered this position and has said that the Due Process Clause of the 14th Amendment incorporates most of the rights listed in the first 10 amendments. It has said in effect that "due process" summarizes fundamental concepts of justice and liberty, some of which are specified in the Bill of Rights. This includes most, although not all, of the protections in the Fourth, Fifth, Sixth, and Eighth Amendments, as will be noted in the discussion that follows.

State constitutions also include Bills of Rights. Now they are generally patterned on the U.S. Bill of Rights, but in 1789, the First Congress drew on provisions in some State constitutions, which incorporated some of the traditional common law rights of Englishmen, in framing the first 10 amendments. Today some of the rights guaranteed in State constitutions may go beyond the effective scope of Federal rights.

The Prohibition on Unreasonable Searches and Seizures

The meaning and scope of this Fourth Amendment prohibition has repeatedly been brought into question by changing technology. It reads:

> The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated, and no Warrants shall issue, but upon probable cause, supported by Oath and affirmation, and particularly describing the place to be searched, and the persons or things to be seized.

British authorities in the American colonies had issued general "writs of assistance" that allowed searches at will or on slight suspicion, especially for contraband smuggled in violation of Parliamentary duties on imports. This was a factor in the unrest that eventually led to the American Revolution. The Fourth Amendment required a warrant issued by a magistrate,[6] so that law enforcement officials could not invade personal property and privacy at their own discretion, or for purposes of harassment. This constraint now applies to State government actions as a result of the 14th Amendment.

Nearly every phrase in the Fourth Amendment has been frequently challenged, often because of technological changes. Those who drafted this provision in 1789 could not have foreseen automobiles, wiretapping, remote sensing, or biosensors. As early as 1925 the Court allowed warrantless searches of moving vehicles because automobiles had made possible the rapid movement of suspects and evidence out of a jurisdiction.

Beginning in 1928 Congress and the Courts have had to consider whether use of electronic surveillance devices was a search and, more recently, whether accessing computerized databases was a seizure. Courts have had to decide whether evidence may be sought in bank records, medical histories, and insurance files, on paper or in computerized databases.[7] Questions have arisen as to whether and when authorities may "seize" one's breath (for analysis for alcohol), or one's urine, semen, blood, or other fluids and tissues.

The development of electronic surveillance technology, biosensors and biological testing and screening technologies, and computer-

[5]The Slaughterhouse Cases, 83 U.S. 36 (1873).

[6]During an arrest, a warrantless search is permissible if the authority has "probable cause" to believe a crime has been committed.

[7]Ralph C. Chandler, Richard A. Enslen, and Peter G. Renstrom, *The Constitutional Law Dictionary* (Santa Barbara, CA: ABC-CLIO, 1985), vol. 1, "Individual Rights," p. 168, citing *Zurcher v. Stanford Daily* (436 U.S. 547: 1978).

matching and other data aggregation techniques has made many kinds of routine or random surveillance easier, cheaper, and less visible to those who are monitored. In many places, for example, police are increasingly using sobriety checks and photographing traffic to apprehend speeders; Federal and State agencies use computer-matching to detect fraud and abuse in welfare programs; and public employers use random drug testing to enforce workplace rules. In the past, concern about surveillance and privacy has generally focused on the constitutional rights of individuals who are suspected of criminal activity. But many people are now concerned that the increasing use of monitoring techniques may impinge on the privacy of the general public, and indicates a subtle widening of the net of social control that goes far beyond traditional democratic practices.

The Rights of the Accused

There are several specific protections for those accused of crime in the body of the U.S. Constitution, predating the Bill of Rights. Article I, Section 8, guarantees that the writ of *Habeas Corpus* shall not be suspended except in time of rebellion or invasion. The same Section prohibits *bills of attainder* and *ex post facto* laws.

Habeas Corpus means that a person may not be imprisoned without being brought before a judge, who ascertains that the imprisonment is legal and for cause. The name comes from a common law writ that usually began with those Latin words, which mean, "You should have the body . . . ," i.e., have evidence that a crime has occurred. A bill of attainder removed all civil rights and protections from one who had been convicted of certain crimes, usually treason. An ex post facto law would make punishable some action performed before the law was passed.

Article III, Section 2 of the U.S. Constitution guarantees a trial by jury for all crimes. It also provides a strict definition of treason and the requirements for conviction of treason.[8]

Three amendments—the Fifth, Sixth, and Eighth—further protect the rights of those accused of crime. Most of these protections have, in the last two or three decades, also been held to apply to State actions.[9] Most State constitutions had similar protections, but they were not always enforced.

The Fifth Amendment begins with a provision that:

> No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury . . .[10]

A resolution of the 1788 Massachusetts convention for ratification of the Constitution insisted that the right to a grand jury be added to the Constitution.[11] The right was already incorporated in the Constitution of the State of North Carolina. The concept of a grand jury goes back in English common law to the time of William the Conqueror, who took the throne of England in 1066 A.D. But the Fifth Amendment requirement of grand jury indictment does *not* apply to State governments.[12]

[8]Section 2 also provides that the penalty shall not include "corruption of blood," i.e., no penalties such as loss of property can be visited on the children or inheritors of the convicted traitor. Such multigenerational penalties had been common in old world countries where primogeniture was practiced (i.e., estates were by law inherited intact by the oldest son).

[9]*Palko* v. *Connecticut*, 302 U.S. 319, 58 S. Ct. 149, 82 L.Ed. 288 (1937), established "selective incorporation" in determining which Bill of Rights provisions related to rights of the accused should be applied to State actions under the 14th Amendment. This was a case involving double jeopardy; the guideline or "rationalizing principle" enunciated by Justice Cardozo, was whether a particular protection is "of the very essence of a scheme of ordered liberty," such that its bypassing would violate "a principle of justice so rooted in the tradition and conscience of our people as to be ranked as fundamental." This case held that the prohibition of double jeopardy was not so fundamental, but this was overturned later; now only the grand jury provision of the Fifth Amendment and the Excessive Fines and Bails prohibition of the Eighth Amendment have not been "selectively incorporated" as limitations on the States.

[10]The clause continues, " . . . except in cases arising in the land or naval forces or in the Militia, when in actual service in time of War or public danger; . . ." which the Supreme Court interprets to mean accusations against any member of the armed forces. Civilians, even dependents of military personnel or civilian employees of the military, may not be tried by military tribunals, and once discharged, a former member of the military cannot be prosecuted for crimes committed while in service, except in civil courts with grand jury protection. Edwin S. Corwin and J.W. Peltason, *Understanding the Constitution* (New York, NY: Holt, Rinehart, & Winston, 1967), p. 122.

[11]Chandler et al., op. cit. footnote 7, p. 201.

[12]*Hurtado* v. *California* (110 U.S. 516: 1884); this ruling has prevailed over the following 100 years. Chandler, et al., op. cit. footnote 7, p. 197, p. 207.

The purpose of a grand jury is to indict or formally accuse one or more persons of crime, but only if there is sufficient evidence to justify a trial. A grand jury cannot convict one of having broken a law. It must refuse to indict if the evidence is inadequate to establish that a crime has occurred and there is cause to suspect the accused and to believe that his[13] conviction may result. Thus access to a grand jury is a protection against arbitrary actions and harassment of citizens by government or its officers.[14]

The Fifth Amendment also provides that no one may:

> . . . be subject for the same offense to be twice put in jeopardy of life or limb . . .

That is, one may not be tried twice in Federal courts for the same offense. If the government fails to get a conviction on the first attempt, it cannot continue to persecute or harass one through the threat of repeated trials. However, one may be subject to both civil and criminal penalties for the same act, and may also be tried by both Federal and State Governments for some actions.[15]

Under the Fifth Amendment, no person:

> . . . shall be compelled in any criminal case to be a witness against himself. . . .

In English common law, this prohibition forbade torture or trial by ordeal. In modern times, it has protected one from being forced to give evidence against oneself in the courtroom. In this century, the question raised was whether one was protected only within the courtroom, or during police questioning as well. If one can be forced by the police to confess, or to provide evidence against oneself, protection against self-incrimination in courtroom testimony may be too late to be effective.

Until 1966, the Supreme Court used the Due Process Clauses in the Fifth and 14th Amendments to reverse convictions that rested on evidence gotten by the police through coercion, which might range from physical punishment through psychological pressure.[16] But in *Miranda v. Arizona*[17] in 1966, the Court specifically extended the reach of the prohibition on self-incrimination to police questioning, and said that no conviction would be upheld unless the suspect had been told his rights.[18] A conviction can be reversed even if there is independent evidence sufficient to prove guilt.

Science and technology have raised questions about the scope of self-incrimination. Statements made under psychiatric examination are protected.[19] However, the protection against self-incrimination has not been extended to cover non-testimonial evidence provided by modern technology. The Court has

[13]For simplicity, the male pronoun will be generally used in referring to one suspected, accused, or convicted of crime. Males commit the overwhelming proportion of crimes, as indicated by the fact that 94.8 percent of those in prison, as of June 30, 1987, are males (information supplied by the Bureau of Justice Statistics, U.S. Department of Justice).

[14]The evidence may be put before the grand jury by a prosecuting officer or may be collected by the grand jury itself, through compelled testimony. There may not be more than 23 members of a grand jury, and 12 must agree on indictment.

[15]A person may be retried in Federal court for the same crime if there is no verdict because the jury cannot agree, or if the judge dismisses the jury or declares a mistrial before the verdict. He or she may also be retried if an appellate court sets aside a conviction because of an error in the proceedings. The test of whether an accusation is for "the same act" is whether the same evidence would be required to sustain a conviction.

[16]The prohibition against self-incrimination by compelled testimony has been held to apply not only in court proceedings but in other government investigating situations; for example, in answering questions put by congressional committees, where such answers might expose one to indictment and prosecution. This protection falls within the 14th Amendment's limitations on the States. It has been held to protect one against the risk of prosecution by States; and one can claim the right under the Fifth Amendment not to answer questions put by a State agency that might lead to Federal prosecution. However, the Federal Government may grant immunity from both Federal and State prosecutions, in which case a witness may be fined or imprisoned if he or she refuses to answer questions.

[17]384 U.S. 436 (1966).

[18]Specifically, the suspect must be told that he has the right to remain silent, must be warned that anything he says may be used against him during trial, must be informed that he has a right to have a lawyer present during questioning, and must be told that the court will provide a lawyer if the suspect has no funds to pay for one.

[19]*Estelle* v. *Smith*, 451 U.S. 454 (1981). Psychiatric testimony was used at the sentencing stage (a separate hearing under Texas law). The Court held that self-incrimination is prohibited at all stages, applies to statements made to a psychiatrist when the psychiatrist testifies for the prosecution, and in general the protection is "as broad as the mischief against which it seeks to guard." See Chandler, et al., op. cit., footnote 7, pp. 227-228.

affirmed that police may cause a physician to draw blood from a suspect to determine its alcohol content when there is reasonable suspicion of drunkenness, even over the suspect's objections.[20] Evidence in the form of breath content, semen, hair, or tissue samples may also be taken without consent of the suspect, when taken in a manner that does not "shock the conscience."[21]

The Sixth Amendment guaranteed the right to:

> . . . a speedy and public trial by an impartial jury . . .

in all criminal prosecutions. This right was intended to prevent "undue and oppressive incarceration prior to trial, to minimize anxiety and concern accompanying public accusation, and to limit the possibility that the delay will impair the ability of the accused to defend himself."[22] It does not prevent long delays caused by the defendant and counsel themselves. Recently attention has turned to the question as to whether long delays do not threaten the public interest rather than those of the defendant, but this is not covered by the Sixth Amendment.

The right to a "public" trial has been challenged because of technology; does "public" mean that cameras must be allowed? Could trials be broadcast? The right to public trial is a right of the defendant and not a right of the press, and many verdicts have been challenged by those convicted on the grounds of too much rather than too little public involvement in trials.[23] Courts have allowed reporters and even television cameras access to public trials, but they are not required to do so.

Article III of the U.S. Constitution already required trial by jury of all Federal crimes, without the Eighth Amendment. This redundancy emphasizes its importance under English common law.[24] The right is construed to say that a trial jury must have no more and no less than 12 people, and a unanimous verdict is necessary for conviction.[25] The right to a jury trial may be waived by a defendant, but a judge may still rule that a jury is necessary.

States are not prevented by the Sixth Amendment from having a jury of fewer than 12 in criminal procedures, nor must they require unanimous votes for conviction.

"Scientific" selection of juries—that is, attempts to influence the acceptance of 12 jurors to reflect demographic, social, economic, or cultural patterns desired by one side or the other—is a recent development. It is not yet clear whether it has constitutional aspects or implications.

The Sixth Amendment also requires that an accused person

> . . . be informed of the nature and cause of the accusation, . . . be confronted with the witnesses against him; . . . have compulsory process for obtaining witnesses in his favor, and . . . have the Assistance of Counsel for his defense."

The right to have "assistance of counsel," by virtue of the Miranda decision, now begins as soon as the person is taken into custody by the police. Only in 1978 was this provision extended to the States under the 14th Amendment's Due Process Clause.

With new technology, courts have allowed certain accusers to be confronted by the accused only indirectly; for example, allegedly abused children have been questioned and videotaped in Judge's quarters, and the tapes later shown to the jurors.[26]

[20] *Schmerber* v. *California*, 384 U.S. 757, 86 S. Ct. 1826 (1966).
[21] *Rochin* v. *California*, 342 U.S. 165 (1952).
[22] *United States* v. *Ewell*, 382 U.S. 117 (1966).
[23] Corwin and Peltason, op. cit., footnote 10, p. 126.

[24] The Seventh Amendment provides for trial by jury in common-law cases (civil litigation in Federal courts) when the value in controversy is over $20 and is of little import today. It does not apply to equity proceedings nor to cases arising from statutory law, and it may be dispensed with by agreement of the two parties with the consent of the court.
[25] The jury requirement does not however apply to petty offenses, to deportation proceedings, nor to military tribunal proceedings.
[26] The right to be confronted in open court by accusers applies only to criminal trials, and not to, for example, deportation proceedings.

People who are accused may not be able to defend themselves adequately in court if they have been unable to seek evidence and witnesses because they were held in prison from the time they were accused until they were brought to trial. The Eighth Amendment forbids "excessive bail," that is, bail should not be set prohibitively high, but only high enough to make it probable that the accused will appear for trial. A person can however be denied bail when the possible penalty for the crime is death, since avoiding this would be worth the loss of any amount of money.

The Bail Reform Act of 1966 allowed magistrates to take into account other factors, such as prior criminal offenses and family and community ties that would discourage running away. These changes reflect in part the results of social science research and computer simulations that relate such factors to the probability of undesirable future behavior. Recent legislation further eases the restrictions on pre-trial detention where there is reason to think the accused may commit other crimes while awaiting trial.

The Rights of Those Convicted of Crimes

Once convicted of a crime, people still have constitutional protections. The Eighth Amendment says that:

> Excessive bail shall not be required, nor excessive fines imposed, nor cruel and unusual punishments inflicted.

"Cruel and unusual punishment" in 1789 meant imposition of severe physical pain through such punishments as burning at the stake, crucifixion, breaking on the wheel, and the thumbscrew. It was not construed at that time or subsequently to include capital punishment, whether by the old technologies of hanging or shooting or the later technologies of electrocution, lethal gas, or injection. There has, however, been a movement in the direction of lethal technologies generally considered less painful to the victim. Arguments have been made that in the modern world, "early" death is less usual and hence more "cruel" than it was 200 years ago, but this has not been accepted by the courts. The Supreme Court has however recognized that the standard of "cruel and unusual" can change over time. It has declared that punishment is cruel and unusual when out of proportion to the offense, when it punishes illness (i.e., addiction to drugs, without evidence of a crime), or when it involves loss of citizenship (i.e., for desertion from the armed forces).

The protections of the Eighth Amendment apply against actions of the States under the 14th Amendment.

Due Process

The broadest, most frequently cited, and most frequently challenged protection of the Fifth Amendment, repeated in the 14th Amendment, is the provision that a person may not:

> . . . be deprived of life, liberty, or property, without due process of law. . . .

The Court has developed two complementary concepts of "due process," i.e., procedural due process and substantive due process. Procedural due process means that laws and their applications must not be arbitrary, vague, or inconsistent in effect; all legal standards and procedures should be basically "fair," regular, and ordered. Disputes about procedural due process under the Fifth Amendment have generally centered on whether this is an additional limitation on the Federal Government, or merely reinforces the other provisions of the Bill of Rights. Justice Black and other Justices have held the latter view, on the grounds that to strike down a law because it violates general standards of justice is to give too much discretion to courts, but there is no clear rule on this point.[27]

"Substantive due process" looks to the purpose and substance of a law or government procedure rather than to the way it is used. This concept holds that laws and policies must be

[27]Corwin and Peltason, op. cit., footnote 10, pp. 124-125.

rationally related to legitimate legislative objectives; some areas are beyond the reach of government power. This concept was developed and applied sporadically, after about 1890, first to strike down economic regulations that limited property rights, but later to expand the scope of personal rights, especially those related to contraceptive technology, abortion, and marital privacy.[28] From 1890 to 1937, substantive due process was generally used to assert freedom of contract. The Court struck down laws fixing minimum wages and hours of labor, forbidding employers to fire workers for joining unions, and prohibiting child labor. After 1937, the Court refused to use the concept of substantive due process in this way. Thirty years later, it again began to use the concept to wall off from government interference certain private activities, primarily marriage, procreation, child rearing, and educational choice, held to be beyond the appropriate reach of legislation.

The Right of Privacy

Those who have been convicted of crime have a diminished right of privacy as compared with other people;[29] but this right does constrain the activities of governments in investigating, prosecuting, and punishing crime. The Bill of Rights does not use the word "privacy," nor is this right explicitly stated elsewhere in the U.S. Constitution; but the Bill of Rights as a whole is understood to define or indicate a "penumbra of privacy" where government should not intrude. Thirteen State constitutions contain explicit guarantees of a right to privacy. For example, the Constitution of the State of California includes the right to privacy among the "inalienable rights" listed in Article I, Section 1.[30]

At the Federal level, Judge Brandeis said in a 1928 wiretapping case that the Fourth and Fifth Amendments together recognized "a right to be let alone," which is the right "most valued by civilized men."[31] Brandeis was however in dissent in that case. In a 1958 civil liberties case Justice Harlan spoke of the "vital relationship between freedom to associate (in the First Amendment) and privacy in one's associations." In a 1969 pornography case Justice Marshall said that regulation of obscenity cannot extend into "the privacy of one's own home," and that the government has no business to tell a man "sitting alone in his own house, what books he may read or what films he may watch."

The right to privacy was made explicit in *Griswold v. Connecticut*,[32] in 1965, striking down a contraceptive law. Since then it has been expanded to include other aspects of marriage, reproduction, and health. It is usually based on the Due Process Clause and on the Ninth Amendment doctrine of retained rights, and more generally on a "zone of privacy" or penumbra created by several fundamental constitutional guarantees.

The right to privacy has two slightly different aspects: one of personal autonomy, a sphere of action (such as reproduction) where the individual makes choices without interference by government unless there is a compelling public interest; and one of confidentiality, where government or the public in general has no right to know something about an individual. In general, the right to autonomy is diminished when one is formally accused of crime and very narrowly constrained if one is convicted of crime; and similarly, the right to confidentiality is also progressively diminished for those suspected, accused, or convicted of crime. These personal rights, however, while narrowed do not disappear. Prisoners retain some claim both to personal privacy and to autonomy—for example, rights to basic religious observances and to consent or refusal to participate in medical research projects.

[28] Ibid.

[29] *Hudson* v. *Palmer*, 468 U.S. 517 (1984) [Prisoners have no reasonable expectation of privacy in their cells and, hence, no protection by the Fourth Amendment against unreasonable searches]; *Block v. Rutherford*, 468 U.S. 576 (1984) [Prisoners have no right to be present when authorities search their cells].

[30] Legislation Drafting Research Fund of Columbia University, *Constitutions of the United States: National and State* (New York, NY: Oceana Publishers, November 1985).

[31] *Olmstead* v. *United States*, 277 U.S. 438:1928.

[32] 381 U.S. 479.

TECHNOLOGICAL TRENDS

There are many indications that continuing trends in technology will stimulate continuing reexamination of the constitutional rights of those suspected, accused, or convicted of crime. Information technology, in particular, is permeating all phases of the administration of justice. As used in surveillance, it strongly supports law enforcement but involves risks of violation of the constitutional right to privacy. Sensing techniques—involving sight and photography, sound and tapping or taping, and a variety of biological sensors—are increasingly powerful, able to operate at great distances, miniaturized and easy to conceal, and otherwise undetectable to the subject. In the form of data aggregation, storage, and processing systems, information technology allows local jurisdictions to cooperate, decreasing their dependence on national law enforcement agencies. But it also creates records that are persistent and widely shared, and difficult for the subject to know about, to access, to verify, or to correct.

Emerging technologies based on molecular biology may reveal some of the causes of violent, aggressive, and antisocial behavior. They could also be used to manipulate or control behavior, and this would risk violations of individual autonomy. And they could provide information about people, thus risking invasions of privacy.

Social science-based techniques are increasingly used to predict, manipulate, and control behavior, and to guide and standardize decisions related to law enforcement and criminal justice. By depersonalizing the decisionmaking process they may attribute to individuals the characteristics of groups and in so doing may have the paradoxical effect of increasing the risk of violating equal protection of the law.

All of these technologies, and the scientific knowledge on which they are based, may affect the nature of evidence that is used in identifying offenders, and in helping juries determine their guilt or innocence. A knowledge of scientific principles and methodology may be necessary to fully understand the means by which this information was gathered, what it indicates, and the degree of certainty or uncertainty in this interpretation. Lay judges and juries may have difficulty in reaching this understanding. Knowing this, courts have often been slow to accept new kinds of technology-mediated information. This is a necessary safeguard; there must be very high reliability in presenting evidence to a jury. Experts have remained divided on the reliability of polygraphs, for example, and courts have not accepted such evidence.[33] The use of evidence based on advanced science and technology could also put some defendants (especially those who are indigent or not highly educated) at a relative disadvantage. At the same time, both law enforcement agencies and government prosecutors may be unnecessarily handicapped in identifying and prosecuting criminals, if courts are unnecessarily slow to accept scientifically sound evidence.

There are nontechnical reasons to examine carefully how technologies are used in criminal justice. Many new science-based technologies have similar effects which could degrade constitutional protections:

- They increase the ability of government to observe, control, or intervene in the affairs of an individual singly, rather than with large groups or the public as a whole; this could erode the effectiveness of constitutional restraints based on common law formulations.
- They allow investigation or surveillance at a distance, or out of sight of both the subject and concerned public interest groups; generally raising the level of surveillance and narrowing the expectation of privacy in society.
- By increasing the power of government to detect infractions and prosecute or pun-

[33]U.S. Congress, Office of Technology Assessment, *Scientific Validity of Polygraph Testing: A Research Review and Evaluation—Technical Memorandum* (Washington, DC: U.S. Government Printing Office, November 1983).

Photo credit: Luma Telecom Sales Division of Mitsubishi Electric Sales America, Inc.

Computer systems enable investigators to more quickly and accurately identify suspects.

ish minor infractions of law, they may either enhance the achievement of law and order, or widen the net of social control, or do both.

- While bringing greater expertise to bear on crime investigation and control, they also tend to move decisionmaking about guilt and about punishment from laymen (peers, citizens) to experts (the technical elite).
- Some suggest alternatives to traditional modes of correction or punishment, which in turn may create issues of equal treatment or equal protection of the laws.
- They may increase the disparity between rich and poor, highly educated and undereducated, in the ability to defend oneself in court or in the penalties that are visited on those found guilty.

While these characteristics give cause for caution, modern technology holds great promise for improving the enforcement of criminal laws and the administration of criminal justice, to the benefit of all Americans. With the aid of electronic surveillance, Automated Fingerprint Identification Systems, mobile digital computers, and expert systems, for example, police can make more arrests and apprehend more serious offenders. Similarly, technological advancements and new methodologies can, if wisely used, enable prosecutors, courts, and corrections officials to concentrate their often limited resources on violent and repeat offenders. Innovations in decisionmaking, such as development of criteria and guidelines, improve the consistency of the criminal justice process. The benefits of these technologies are well-established and apparent, in spite of some potential for abuses.

Chapter 2

New Technology for Investigation, Identification, and Apprehension

In most cases, a suspect enters the criminal justice system as a result of investigation and apprehension by the police. Since the beginnings of organized police work in the early 19th century, technological advances have widened the net cast by police investigations and have improved the ability to identify offenders and capture suspects. Now new technologies are providing police with powerful new capabilities. By improving the abilities of local and State law enforcement agencies to cooperate across jurisdictions, these new technologies may also decrease their dependence on Federal law enforcement agencies.

MOBILE COMMUNICATIONS

The municipal police, as an institution, are a relatively modern invention. They date from 1829, when Sir Robert Peel, then the British Home Secretary, won approval from Parliament for the creation of a metropolitan police force.[1] In the American colonies cities had watchmen who patroled streets at night to secure life and property and to care for the lights. It was 1844 before the first metropolitan police force was formally organized, in New York. Other major American cities quickly followed suit.[2]

The police walked prescribed beats, isolated from headquarters and without means of communications. Commanders had difficulty supervising their men and responding to emergencies. The establishment of telegraph networks in the 1850s linked police districts to headquarters and, eventually, the beat patrolman to his station house. The call box was initially simply a signaling lever indicating the presence of the officer at his prescribed post. Telephones were put in call boxes in 1880 for two-way communications between the officer on the street and his station house. With the introduction of the automobile and the radio in the early 1900s, an officer was able to cover a substantially larger beat, increase the frequency of patrol, and respond to calls for service.

While much of today's police work is done from an automobile, many large departments also use motorcycles, airplanes, and helicopters. Most departments use both car radios and hand-held walkie-talkies, giving officers substantially more freedom of movement and greater security. Many have also installed mobile digital terminals in police cars. Linked to automated databases, these terminals enable the officer to query drivers' license files and other relevant information systems.[3] Computer-assisted dispatching systems let dispatchers keep track of where officers are and efficiently assign cars to calls.

These technologies have raised some constitutional issues related to a subject's rights during apprehension and arrest when an ar-

[1]R.B. Fosdick, *European Police Systems* (New York, NY: The Century Co., 1915). The English police were subsequently referred to as "Peelers" or "Bobbies" in reference to the author of the bill from which they originated. L.A. Radelet, *The Police and the Community* (Beverly Hills, CA: Glencoe Press, 1973).

[2]E.H. Sutherland, *Criminology* (Philadelphia, PA: J.B. Lippincott, 1924), pp. 186-187. Also see Law Enforcement Assistance Administration, *Two Hundred Years of American Justice: An LEAA Bicentennial Study* (Washington, D.C.: U.S. Government Printing Office, 1976). Chicago established its police force in 1851, followed by New Orleans and Cincinnati in 1852, Boston in 1854, and Baltimore and Newark in 1857. J. Rubinstein, *City Police* (New York, NY: Farrar, Straus & Giroux, 1973).

[3]Other systems include the National Crime Information Center (NCIC), which is operated by the Federal Bureau of Investigation (FBI). See G. Lyford and U. Wood, Jr., "National Crime Information Center: Your Silent Partner," *FBI Law Enforcement Bulletin*, No. 52, March 1983, pp. 10-15 for a discussion of the NCIC system.

resting officer has used computer-provided data that proved to be wrong or obsolete. These questions will be considered further in chapter 5 on constitutional issues related to quality of criminal history records.

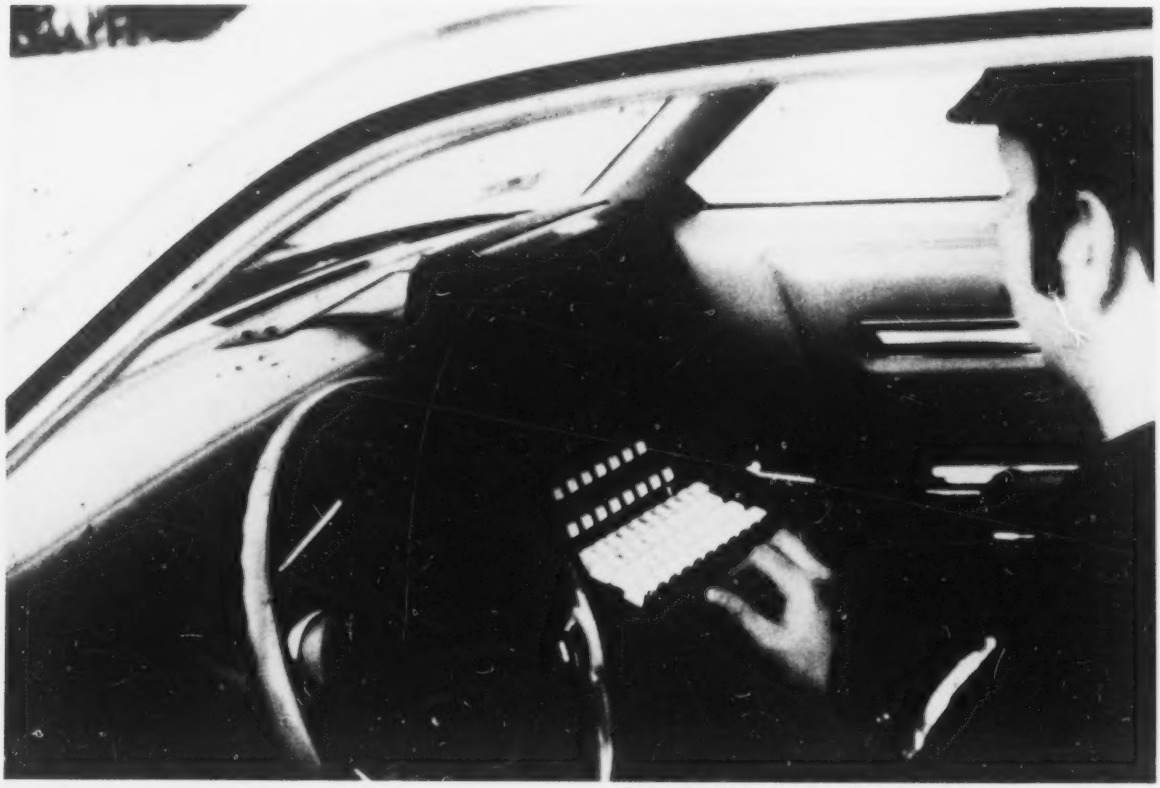

Photo credit: National Institute of Justice Technology Assessment Program

Digital terminals in police cars allow instant access to computerized databases.

ELECTRONIC SURVEILLANCE

In the last two decades, advances in imaging technology, remote sensing, telecommunications, computers, and related technologies have greatly increased the capability for surveillance of people and their activities. Electronic surveillance includes both sensing techniques and techniques for aggregating and comparing computerized records to reveal additional information about an individual. The Fourth Amendment guarantee of "the right of people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures" has required, and will in the future require, frequent reexamination and reinterpretation in the context of these new means of surveillance, by both Congress and the Federal Courts.[4]

Title III of the Omnibus Crime Control and Safe Streets Act of 1968 extended the existing statutory and judicial principles regard-

[4]Information in this section not otherwise cited comes from the report, U.S. Congress, Office of Technology Assessment, *Federal Government Information Technology: Electronic Surveillance and Civil Liberties*, OTA-CIT-293 (Washington, DC: U.S. Government Printing Office, October 1985.)

ing privacy to surveillance technology, but at that time this technology still consisted largely of telephone taps and concealed microphones. It now includes many far more sophisticated technologies that can be used to:

1. identify an individual's location or track an individual's movements;
2. monitor and record actions, such as dialing of telephone numbers or automated transactions;
3. listen in on communications or to intercept digital communications;
4. visually monitor behavior; and
5. test or measure reactions and emotions (polygraph testing, voice stress analysis, brain wave analysis, etc.).

Electronic surveillance technologies already in use by Federal law enforcement or intelligence agencies, and by some State and local agencies, include at least the following:[5]

- closed-circuit television;
- light vision systems and image intensifiers;
- parabolic microphones;
- minature transmitters;
- electronic beepers;
- telephone taps and recorders;
- pen registers;
- computer usage monitors;
- electronic mail monitors;
- cellular radio interception;
- satellite beam interception;
- pattern recognition systems; and
- intruder detector systems working on vibrations, ultrasound, infrared radiation, etc.

Pen registers are devices that are attached to a telephone line to record the dialed pulses by sensing the changes in magnetic energy, thus allowing the interceptor to identify the telephone numbers being called. Parabolic microphones can tremendously amplify sound. Lasers can be used to amplify window vibrations and convert them to audible sound. Night observation devices use infrared radiation or intensify ambient light (e.g., from stars) to the visible spectrum. Image intensifiers allow individuals to be recognized at 100 meters (325 feet).[6]

The surveillance technologies most frequently used by law enforcement agencies are undoubtedly still wiretaps and "bugs," or hidden microphones. In 1986, Federal and State judges approved 754 requests for electronic surveillance, out of 756 that were submitted. This was a drop of 4 percent over the previous year and 6 percent fewer than in 1984.[7] This does not include the 573 wiretaps conducted under the Foreign Intelligence Surveillance Act in 1986.[8]

Wiretapping has been a subject of constitutional challenges for 60 years. The Supreme Court ruled in a 5-4 decision[9] in 1928 that wiretapping was not contrary to the U.S. Constitution because there was no physical trespass and no search or seizure of physical belongings, and because voice communications projected outside one's house were not protected. Bills were then introduced in Congress to restrict wiretapping, but none passed. Six years later, Congress recodified the 1927 Radio Act. Section 605 of this 1934 Communications Act said that "no person not being authorized by the sender shall intercept any communications and divulge the contents." Congress may not have intended that prohibition to apply to law enforcement, but the Su-

[5]In 1985, OTA sent a Federal Agency Data Request to all major components within the 13 cabinet-level agencies and to 20 independent Federal agencies, asking about use of surveillance technology, as well as other electronic technologies. The National Security Administration and the Defense Intelligence Agency within the Department of Defense were excluded because the data request results were to be unclassified.

[6]Steve Wright, Program of Peace and Conflict Research, University of Lancaster, United Kingdom, "New Police Technologies: An Exploration of the Social Implications and Unforeseen Impacts of Recent Developments," *Journal of Peace Research*, vol. XV, No. 4, 1978, pp. 5302-322.

[7]"Report on Applications for Orders Authorizing or Approving the Interception of Wire or Oral Communications for the Period Jan. 1, 1986 to Dec. 31, 1986," prepared by the Statistical Analysis and Reports Division of the U.S. Courts, Washington, DC 20544, p. 2.

[8]This information was supplied by congressional staff, to update figures contained in U.S. Congress, House of Representatives, *Implementation of the Foreign Intelligence Surveillance Act*, Report 98-738, May 9, 1984, 98th Cong., 2d sess., app. C. In 1983, 549 FISA Court orders were obtained.

[9]*Olmstead* v. *United States*, 277 U.S. 438.

preme Court held in 1938 that it prohibited all wiretapping, even by Federal officials.[10] Bills to allow law enforcement wiretaps with procedural safeguards passed both houses, but did not clear a conference committee before the session ended. In spite of the Court's ruling, the Justice Department, construing Section 605 differently from the Court, continued to use wiretaps.

Finally, in 1967,[11] the Supreme Court ruled that wiretapping was a "search" under the Fourth Amendment. The Court further held that it may be "unreasonable" if the subjects have a "reasonable expectation of privacy" in the area or in the activity under surveillance. As to how such an expectation is to be established, the Court has adopted a two-part test based on Justice Harlan's concurring opinion in that case: that the person has exhibited an actual (subjective) expectation and that society is prepared to recognize it as reasonable. This appears to mean that one's privacy is protected if one closes a telephone booth door before speaking (demonstrating an expectation of privacy) but not if one is talking on an unenclosed telephone in a public office. However, the Court also said that the Fourth Amendment "protects people, not places." This may have been intended to avoid the tie to physical trespass in the 1928 decision, but its full meaning is not clear.

The Court also left unanswered the question of how the *Katz* decision would apply to other forms of electronic surveillance. The courts have tried to extend the principle of a "reasonable expectation of privacy." This becomes more and more tenuous in the context of remote sensing devices, but the courts generally have continued to assume that certain places such as residences and yards should have a higher level of protection than other places.

Wiretapping by law enforcement and national security agencies can be done only under certain procedural safeguards, set out in Title III of the 1968 Omnibus Crime Control Act. This law prohibits electronic tapping of conversations except under a court order, when consented to by one participant in the conversation,[12] for certain necessary telephone company monitoring, and (under later amendment) in surveillance allowed by the Foreign Intelligence Surveillance Act of 1978. The court orders must be requested by high-level prosecutors, be related to one of a specified list of crimes, rest on probable cause to believe that a crime has been committed by the target of the surveillance, and be necessary because other kinds of investigation would be ineffective, among other procedural requirements. State officials are also allowed to wiretap under State legislation modeled after the act and for the investigation of specified crimes.

The Foreign Intelligence Surveillance Act of 1978 set standards for use of electronic surveillance in collecting foreign intelligence and in counter-intelligence activities within the United States. It covers not only wiretapping of voice communications, but taps of teleprinters, telegraphs, facsimile machines, and digital communications. The 1978 law also covers radio intercepts and other monitoring devices, such as closed-circuit television and vehicle trackers. In these categories, protection against surveillance is limited to circumstances in which a person has a reasonable expectation of privacy and a warrant would be required if surveillance were conducted for law enforcement purposes.

Two recent Supreme Court cases involved surveillance by means of new technology. In *Dow Chemical Co. v. United States*, 1986, the company contested an action of the U.S. Environmental Protection Agency (EPA). The agency, refused permission to make an on-site inspection of a chemical facility, hired a commercial aerial photographer to make pictures from within lawful navigable air space, without benefit of a search warrant. The Court held

[10] *Nardone* v. *United States*, 302 U.S. 379.
[11] *Katz* v. *United States* 389 U.S. 347, 360.

[12] The Massachusetts Supreme Court recently ruled that the State constitution requires a warrant for electronic surveillance of a private home even when one party to a conversation has consented to its recording and transmission. *Commonwealth v. Blood*, 507 N.E. 2nd 1029 (Mass. 1987). This is an example of more stringent safeguards under a State constitution than under the U.S. Constitution, a not unusual occurrence.

that this was not a search prohibited by the Fourth Amendment, because the commercial facility was analogous to an open field rather than a personal dwelling (in terms of the expectation of privacy) and because EPA was using a "conventional" camera that merely enhanced human vision.

In *California v. Ciraola*, argued the same day, the Court held that the Fourth Amendment was not violated by observation and photography (without a search warrant) of marijuana growing in the garden of a private house, which was enclosed and shielded by fences. The owner of the garden had shielded it from some views, but not from "a public vantage point" where police officers had a right to be, thus the expectation of privacy was not reasonable.

These two cases appear to make the "reasonable expectation of privacy" a function of rapidly changing technology. They seem to say that given more and more powerful surveillance technology there will be fewer and fewer places or circumstances in which one could reasonably expect privacy and in which, therefore, one would be protected against unreasonable searches and seizures, or against surveillance without a search warrant. This makes it likely that there will be further challenges to determine the limits to which surveillance may constitutionally go.

The Electronic Communications Privacy Act of 1986[13] was enacted to extend protection from electronic surveillance to voice and data digital communications, electronic mail and messaging services, and cellular phones, thus expanding Title III protections. Nevertheless, there may already be surveillance technologies not covered by statute, especially when they do not technically require interception of existing communications systems.

[13]Public Law 99-508, Oct. 21, 1986, 100 Stat. 1849-1855.

COMPUTERIZED DATA MATCHING

Computer matching is the computerized comparison of two or more sets of electronic records to search for individuals who are included in both or all sets. It is used in many government agencies to detect fraud, waste, and abuse; for example, the collecting by one person of overlapping or redundant government benefits, where this is not legitimate.[14]

The National Crime Information Center (NCIC) is a criminal justice information database administered by the FBI and used by 64,000 local, State, and Federal agencies. It holds over 19 million records related to convicted, wanted, unidentified, and missing persons, as well as descriptions of stolen articles, vehicles, guns, and license plates. In 1987 the NCIC's Advisory Policy Board (APB) considered proposals to broaden the database in redesigning the NCIC system, to include records of misdemeanors and juvenile offenses, photographs and artist sketches of persons under investigation, DNA patterns, and some other kinds of investigative information.[15] The APB rejected or narrowed some proposals because of their civil liberties implications, but approved concepts for tracking files for subjects of investigations related to drugs, murders, or kidnappings. This would be a major departure since NCIC has so far been a public record system.

[14]U.S. Congress, Office of Technology Assessment, *Federal Government Information Technology: Electronic Record Systems and Individual Privacy*, OTA-CIT-296 (Washington, DC: U.S. Government Printing Office, June 1986).

[15]A memorandum on "Proposed Expansion of NCIC" was sent to "interested parties" requesting comments on these proposals, on June 11, 1987, by Congressman Don Edwards, Chairman of the Subcommittee on Civil and Constitutional Rights of the Committee on the Judiciary, U.S. House of Representatives. In response to this memorandum, staff members of OTA's Communication and Information Technologies Program prepared a Staff Paper on "Issues Relevant to NCIC 2000 Proposals," Nov. 12, 1987, for use of the Hon. Edwards' Subcommittee in considering the Advisory Panel proposals. Results of the NCIC Advisory Policy Board meeting on Dec. 9-10, 1987, when proposals were evaluated, were summarized in a memorandum to Interested Parties, Dec. 16, 1987, from Chairman Edwards.

Proposals were also considered, but rejected, for linking the NCIC with databases operated by the Internal Revenue Service, the Social Security Administration, the Securities and Exchange Commission, the Immigration and Naturalization Service, and the Bureau of Alcohol, Tobacco, and Firearms. These proposals, if accepted, would have allowed wide opportunities to aggregate information about almost any individual through computer matching. The APB did approve on-line linkages to the files of the Bureau of Prisons, the FBI criminal history files, the Canadian motor vehicle registration files, the files of the Canadian version of NCIC, and the "modus operandi" files of the FBI's Violent Criminal Apprehension Program. These linkages should improve the usefulness of NCIC to law enforcement officers without raising serious new concerns about privacy and civil liberties.

The APB-approved proposals must be accepted by the FBI Director, and then will become part of the "user requirements" for redesign of NCIC computers and software in the next 2 years, subject to congressional oversight.

It is probably impossible for statutory law on privacy and civil liberties to keep up with the rapid development or improvement of surveillance technologies and computer data management technologies. Thus Congress and society will be forced by recurring challenges to reexamine and reinterpret the application of Fourth Amendment protections as technology continues to change.

DNA TYPING

DNA (deoxyribonucleic acid) is the basic genetic material, found in every cell of the body. DNA itself is made up of four nucleotides, arranged in two long strands. The order in which the four nucleotides fall along the strand of DNA varies. The chemical structure of the nucleotides (labeled A, G, C, and T) are the same in every person, but the nucleotides are sequenced in a different pattern in each individual; only identical twins have been found to share common DNA patterns. Molecular biologists have developed a test in which the DNA is examined and mapped to determine the sequencing of nucleotides as a method of personal identification.[16] This is called DNA typing; by analogy it is sometimes spoken of as DNA fingerp:inting.

Dr. Alec J. Jeffreys, of the University of Leicester in England, working with two other scientists from the British Home Office's Forensic Science Service, first adapted DNA typing for police use. The test quickly proved useful in determining paternity. In the United States, one of the several companies offering DNA paternity tests reports that it has performed 5,000 of them since 1982.[17]

The technique was quickly used in criminal cases. In a multiple rape-murder case in England, a suspect was cleared when DNA typing of his blood and of semen taken from the victims' bodies proved that he could not have been the rapist.[18] Police then urged all men in the community between the age of 13 and 30 to provide a blood sample for analysis. Their theory was that about 60 percent of the samples provided could be eliminated by simple blood tests, and the rest would be subjected

[16]Peter Gill, "A New Method for Sex Determination of the Donor of Forensic Samples Using a Recombinant DNA Probe," *Electrophoresis*, vol. 8, 1987, pp. 35-38. Peter Gill, Joan Lygo, Susan Fowler, and David J. Werrett, "An Evaluation of DNA Fingerprinting for Forensic Purposes," *Electrophoresis*, vol. 8, 1987, pp. 38-44. Barbara E. Dodd, "DNA Fingerprinting in Matters of Family and Crime," *Nature*, vol. 318, Dec. 12, 1985, pp. 506-507.

[17]"Admission of DNA Fingerprints Prompts Queries," *The National Law Journal*, Jan. 18, 1988. In a recent case in England, DNA typing was used to establish maternity. British authorities denied entry into Britain to a Ghanian boy, basing this action on their doubt that the woman claiming to be his mother was in fact his mother. DNA typing "confirmed the relationship because the minisatellites detected by the (DNA) probes are so hypervariable that the chance of a sister of the alleged mother sharing all the maternal specific bands of the child" was extremely remote. See B.E. Dodd, op. cit., footnote 16.

[18]Anthony Schmitz, "Murder on Black Pad," *Hippocrates*, vol. 2, No. 1, January/February 1988, pp. 48-58.

to DNA typing. As the police hoped, however, it was not necessary to examine the DNA of 1,600 men. Even though in England these blood samples could only be acquired on a voluntary basis, one man, in order to clear himself, persuaded a friend to give blood in his place and under his name. The police were tipped off, and the man later confessed to the murders.

In England genetic typing is accepted as conclusive evidence.[19] Its status in the United States is less clear-cut at this time. In a recent case in Florida, a judge admitted DNA "fingerprints" as evidence in a rape case. Scientists testified that semen found in the cervix of the rape victim was "a perfect match" to that of the accused, who could not be identified by the victim and had offered an alibi. The accused man was convicted.[20] DNA prints have also been admitted as evidence by judges in Oklahoma, Florida, New York, and Pennsylvania. According to an Associated Press account, most of the defendants who have been confronted with such evidence have pleaded guilty.[21]

Experts believe the test will be useful in rape, homicides, and other investigations where blood or semen evidence can often be retrieved. There are problems, however, with DNA typing for police investigations. One of them is that it now takes about 2 weeks. In addition, a relatively large amount of blood or semen is required, which is a difficulty in using the test in homicide and rape cases. In a recent rape case in the District of Columbia, which had to be retried 5 years after the first trial and conviction, a semen sample which had been collected from the victim's body at the time of the crime proved to be both too small and too deteriorated from aging, to be useful.[22] Federal Bureau of Investigation scientists hope that they will be able to overcome these limitations with further development of the technique.

No case involving DNA evidence has yet reached the Supreme Court. Courts have ruled that blood extraction can be compelled, by a warrant, for the purpose of criminal investigations if there is a showing of probable cause. In other words, given the proper procedures using a DNA probe might not necessarily be "an unreasonable search and seizure" under the Fourth Amendment, nor would it necessarily constitute self-incrimination under current precedents.[23] However, as an earlier OTA report has pointed out,

> . . . (t)he more personal or intimate the information that is gathered, the more intrusive the surveillance technique and the greater the threat to civil liberties.[24]

In June of 1987, the Advisory Policy Board of the FBI's National Crime Information Center considered a proposal that records kept by NCIC and used in tracking people who have been accused of crimes or who are missing, be expanded to include the capability for storing, transmitting, and matching the DNA characteristics of these persons, but this proposal was rejected.[25]

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[19]According to recent news reports; see "Leaving Holmes in the Dust," *Newsweek*, Oct. 26, 1987, p. 81.

[20]"Admission of DNA Fingerprints Prompts Queries," *The National Law Journal* (Associated Press), Jan. 18, 1988; the case cited is *State v. Andrews*, CR87-1659 (Fla. Cir. Ct.).

[21]"Admission of DNA Fingerprints Prompts Queries," *National Law Journal*, Jan. 18, 1988, p. 42. See also, Kirk Johnson, "DNA 'Fingerprinting' Tests Becoming a Factor in Courts, *The New York Times*, Feb. 7, 1988, p. 1; Alan Dershowitz, "Crime and the Stuff of Life," *Washington Times*, Dec. 8, 1987, p. F3; and Janny Scott, "Blood, Semen Tests Likely To Have Greater Use in Court," *Los Angeles Times*, Nov. 22, 1987, pt. 2, p. 1.

[22]Lee Hockstader, "DNA 'Fingerprinting' Inconclusive in Scott Trial," *The Washington Post*, Feb. 16, 1988, p. A11.

[23]*Schmerber* v. *California*, 384 U.S. 757, 86 S. Ct. 1826, 16 L. Ed. 2nd 908 (1966).

[24]U.S. Congress, Office of Technology Assessment, *Federal Government Information Technology: Electronic Surveillance and Civil Liberties*, OTA-CIT-293 (Washington, DC: U.S. Government Printing Office, 1985), p. 22.

[25]Edwards, op. cit., footnote 14.

AUTOMATED FINGERPRINT IDENTIFICATION SYSTEMS

On February 20, 1978, 48-year-old Miriam Slamovich, a survivor of Nazi concentration camps, encountered a burglar in the bedroom of her San Francisco home. The intruder panicked and shot Mrs. Slamovich in the face. She died a month later. The crime scene investigators assigned to her case had little hope of finding the murderer—Officers Ken Moses and Walter Ilhe had no leads or suspects, only fingerprints left on the windowsill and bedroom window of Mrs. Slamovich's home.[26]

Returning to the police department, Moses and Ihle began the tedious and frustrating process of comparing the latent prints with the thousands of rolled fingerprints cards on file. The odds of finding a match in a database with more than 300,000 prints were remote, but over the next 6 years the officers faithfully spent thousands of hours trying, driven by rage that Miriam Slamovich could survive the brutality of the concentration camps, only to be fatally shot in her own home by an intruder.

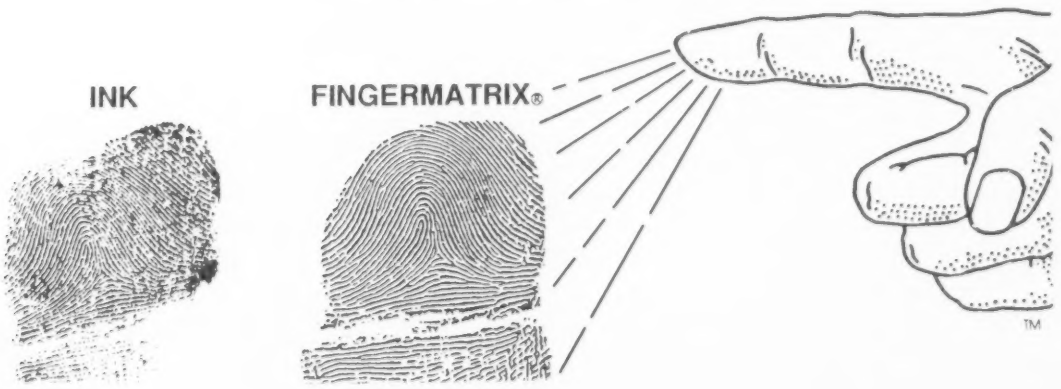
In 1984, the city of San Francisco installed a new Automated Fingerprint Identification System (AFIS). Moses decided to test the latent prints of Mrs. Slamovich's killer, which had been sitting on his desk for 6 years. Once fed into the computer, a match was found in less than 6 minutes. The crime scene prints matched those of Leoncio Saulney, a young computer operator who had once been arrested and booked on a minor trespassing charge. Saulney was arrested, and at first denied ever having been in the Slamovich home; when confronted with the fingerprint evidence, he confessed to the crime and pled guilty to first degree murder.

The newest generation of AFIS has revolutionized fingerprint identification technology.[27] The heart of AFIS technology is the ability of a computer to scan and digitize fin-

[26]This account was provided by the SEARCH Group, Inc., "New Technologies in Criminal Justice: An Appraisal," contractor report prepared for the Office of Technology Assessment, 1987.

[27]There are relatively few publications on AFIS technology. See T.F. Wilson, "Automated Fingerprint Identification Systems," *Law Enforcement Technology*, August-September 1986; U.S. Department of Justice, Bureau of Justice Statistics, *Technology and Policy Issues* (Washington, DC, forthcoming); and *Proceedings of a SEARCH National Conference on Automated Fingerprint Identification Systems*, Kansas City, MO, Feb. 26-28, 1986 (Sacramento, CA: SEARCH Group, Inc., transcript).

Fingerprint Scanner Replaces 90-Year-Old Practice of Inking and Rolling Fingerprints



A proprietary electro-optical system scans and digitizes live fingerprints, eliminating inking and rolling. Ten-print fingerprint cards are generated for standard law enforcement use.

SOURCE: Fingermatrix, Inc., White Plains, NY.

gerprints, to automatically create a spatial geometry or map of the unique ridge patterns and minutiae of the prints, and to translate this spatial relationship into a binary code for the computer's searching algorithm. Making incredibly fine distinctions among literally thousands or millions of prints, an AFIS computer can in a matter of minutes compare a new fingerprint with the massive collections of prints on file and make identifications that previously were possible only through a time-consuming and error-prone process of manual comparison.

This has greatly increased the speed and accuracy of ten-print processing and has made it possible to conduct "cold searches" (i.e., a search where there are no suspects or other identifying information other than the crime scene prints) against very large fingerprint files.[28] The search time in a file of less than 500,000 prints may range from a matter of minutes to about one-half hour.[29]

A somewhat newer development in AFIS is image storage and retrieval, a byproduct of the initial conversion process by which the search print is read into the system in digital form. It allows the digitized fingerprint images to be stored on an optical disk and retrieved later, with the digitized search prints and the retrieved image of the candidate file prints appearing side by side on the operator's screen for comparison. A less costly alternative to image retrieval is a microfilm and microfiche reader.

One AFIS computer cannot search the files of a different manufacturer's AFIS computer, but this is not a big problem. All the AFIS computer needs from another computer is digitized fingerprint image data to make its own search.[30]

Facsimile is used for transmitting fingerprint images from remote sites to the AFIS computer. The facsimile prints must be of high quality to substitute for the inked impressions in the AFIS, but this quality is increasingly available.

Linked photographic and telecommunications technologies are also being used to lift and transmit prints to the AFIS. The use of a remote television camera linked to telecommunications lines is under trial. A device attached to the camera converts the photographic image into digital data and sends the information via modem directly from the crime scene to the AFIS computer at the State central repository. A fingerprint sent by photographic transmission from a crime scene to a central location within a State could be processed instantly, thus allowing an all-points-bulletin to be issued within minutes.

The identification of latent prints by AFIS begins at the crime scene where the fingerprints must be detected and developed.[31] When a finger touches an object, it leaves a residue of water, oils, salt, amino acids, and other chemicals. This latent print will have the ridge patterns and minutiae needed to make comparisons with file prints. However, finger-

[28]Kenneth R. Moses, "A Consumer's Guide to Fingerprint Computers," *Identification News*, June 1986, pp. 5-10.

[29]Proceedings of a SEARCH National Conference on Automated Fingerprints Identification Systems, op.cit., footnote 25. During the search for a match, the computer uses a scoring system that assigns points to each of the criteria set by a technician, who also sets a threshold score above which he has assurance that a match has produced a hit. Thus, AFIS makes no final decisions on identity. While the score may virtually guarantee a hit, only the trained eye of the fingerprint technician will make the final verification. The use of the fingerprint as evidence in court requires the fingerprint technician to prove, by a comparison of measurements and points of minutiae on the latent and file prints, that the prints match. For verification, an AFIS assists, but does not replace, the fingerprint expert.

[30]National Bureau of Standards, *Proposed American National Standard Data Format for the Interchange of Fingerprint Information* (Washington, DC: National Bureau of Standards, Apr. 7, 1986). On Aug. 25, 1986, the American National Standards Institute accepted the standard entitled "Data Format for the Interchange of Fingerprint Information" (ANSI/NBS/ICST-1-1986), developed by the Institute for Computer Sciences and Technology of the National Bureau of Standards (NBS). This NBS standard will probably pave the way for the sharing of fingerprint data among law enforcement agencies in a form that can be utilized by all AFIS systems.

[31]For a general reference on classification, pattern interpretation, latent fingerprint lifting techniques, and other aspects of fingerprint identification work, see U.S. Department of Justice, Federal Bureau of Investigation, *The Science of Fingerprints: Classification and Uses* (Washington, DC: U.S. Department of Justice, 1977).

prints often can not be made visible on certain surfaces. The traditional method of carbon dusting powder requires relatively fresh prints with ample amounts of residue. Powder works well on glass and hard surfaces, but not on paper, fabric, or other porous surfaces that absorb the moisture and salts left by the fingers. Manual identification of those prints meet with little success.

Today, however, a revolution is taking place in the detecting and "lifting" of latent prints, with the use of chemicals and lasers. For example, ninhydrin, an oxidizing agent, activates the amino acids and makes the ridge patterns visible. It works effectively on surfaces such as paper. Other chemicals restore moisture to faint prints, making them more visible. Cyanoacrylate, which is common household "super glue," attaches itself in its gaseous state to fingerprint chemicals, turns them white, and hardens them. It works well even on fabric and plastic.[32]

Lasers are being used to detect fingerprints on surfaces on which dusting or the use of chemicals has proven ineffective. An intense flood of blue laser light can detect fluorescence in the chemicals found in fingerprint residue, even in very small quantities. The FBI used a laser to detect a fingerprint of a Nazi war criminal on a postcard after 40 years.[33] Lasers are now used mostly in the laboratory, but smaller, more portable units are being tested at crime scenes.

As fingerprint matching becomes a more powerful tool of criminal identification and as matching from large files becomes faster and easier, there will be increasing pressure to expand the files of law enforcement agencies. This is likely to lead to controversies over whether fingerprints that were collected for other purposes should be included in the files. Government employees, military personnel, and juveniles may be routinely fingerprinted for reasons having nothing to do with crime. Congress or the courts may be asked to decide whether this violates the constitutional right to privacy.

The use of fingerprints collected for purposes not related to criminal justice raises the issue of voluntary consent; without this consent the use would be a "search" under the Fourth Amendment. In *Davis v. Mississippi*,[34] fingerprints collected in the course of an unlawful detention were held to be inadmissible in court. The question may also be raised as to whether, under the 14th Amendment's requirement of due process, it would be necessary to tell people that their fingerprints, voluntarily given in another context, were to be used in a criminal investigation.

The broader question, which also applies to the biometric identification systems discussed below, is whether the new technology is making everyone subject at all times to an electronic search even where traditional police searches would require a warrant issued on the basis of probable cause.

[32]Henry C. Lee and R.E. Gaenssien, "Cyanoacrylate, 'Super Glue' for Latent Fingerprints," *The Identification Officer*, spring 1985, pp. 8-11.

[33]T.F. Wilson and P.L. Woodard, U.S. Department of Justice, Bureau of Justice Statistics, *Automated Fingerprint Identification Systems—Technology and Policy Issues* (Washington, DC: U.S. Department of Justice, forthcoming), p. 5.

[34]394 U.S. 721 (1969).

BIOMETRIC SECURITY SYSTEMS

Recent advances in microchip design are being used in devices that verify the identity of persons seeking access to controlled or classified data or to secured areas. They include devices that read fingerprints, palm prints, hand geometry, and voice and retinal blood vessel patterns.[35] One of the early commercially suc-

[35]For general discussions of contemporary biometric technology see M. Thompson, "In Search of Security's Future," *Security World*, vol. 23, January 1986, pp. 26-32; and M. Thompson, "The Newest Wave: Biometric Security," *Security World*, vol. 22, February 1985, pp. 39-43.

cessful devices measures the spatial geometry of the hand (i.e., the length, curvature, and webbing between fingers). Hand geometry data can be stored within a microcomputer attached to the device or on a separate card. The device is currently used in nuclear facilities, government installations, banks, automatic teller machines, and even the cafeteria of a major university.

Other biometric devices read individual fingerprints or palm prints directly from an individual's hand. Some systems can create the standard ten-print fingerprint cards generally used by police departments and the FBI, allowing faster processing and eliminating the mess and smudging of inked prints. A system now under development will use palm prints.

Another innovative strategy relies on the pattern of blood vessels in the retina of the eye, which can easily be seen behind the pupil. The blood vessel pattern appears to be unique to each individual. With one device, for example, a camera scans the retina with a safe, low-level infrared light, which is fed back to a photo sensor. The resulting waveform is then digitized, computer processed, and stored as a signature template for subsequent comparisons.

A system for computerized handwriting analysis, currently under development, would analyze a signature using a variety of characteristics such as speed, pressure, and conformation, and compare it with the authorized signature on file. This technology also has great potential in the commercial world, most notably in banking and the use of credit cards, as well as in crime detection.

Voice recognition systems, though under development for many years, are not yet sufficiently accurate for broad commercial or security uses. Because of the great variability in a person's voice over time and the fact that it can be affected by air quality, physical illness, and mental attitude, the systems remain error prone. Nevertheless, interest in this technology continues.[36] At least two companies have developed voice verification applications for use with electronic monitoring systems. There are conflicting reports about error rates with most of these devices and little can be said as yet about their acceptance by courts.

Scanning technology used in criminal investigations as a way of establishing or verifying identity would perhaps be subject to the same challenges as the matching of fingerprints collected for non-crime-related purposes, as discussed above. However, they are intended primarily to secure entry and access, where their use is governed by contractual agreements between employers and employees, and it is not clear how they may be adapted for identification of criminals.

[36]S.M. Menke, "Voice-Recognition Applications Will Increase in 1987," *Government Computer News*, vol. 6, No. 1, Jan. 16, 1987, pp. 44-45. Also see R. Hager, "Breakthroughs Said To Be Ahead for Voice Recognition," *Government Computer News*, vol. 5, No. 16, Aug. 29, 1986, p. 40.

"LESS-THAN-LETHAL" WEAPONS

Law enforcement officials recognize that there is a dangerous gap in the range of tools available to them.[37] The use of a weapon is necessary in many confrontations, to stop a fleeing suspect, to deal with terrorist and hostage standoffs, to subdue violent or emotionally disturbed persons, and sometimes for riot control. A nightstick may be inadequate, but use of a gun risks unnecessary injury or loss of life and danger to bystanders as well as to the policeman and the suspect. Ideally, policemen should have a range of non-lethal or less-than-lethal weapons appropriate to such situations.

Some progress is being made in developing less-than-lethal weapons, but it has been hampered by a number of factors. Acceptable limits of risk must be set, since any force used against

[37]Material in this section not otherwise cited, relies on Sherri Sweetman, *Report on the Attorney General's Conference on Less Than Lethal Weapons* (Washington, DC: U.S. Department of Justice, National Institute of Justice, March 1987).

a person can potentially hurt or kill. Tolerances vary widely among people, especially in relation to size, health, and drug use. Environmental factors can greatly increase the danger to those against whom a weapon is used.

Less-than-lethal weapons will endanger the law officer when they are at least as reliable, accurate, and easy to use as conventional weapons. Their potential for misuse or abusive use must be minimal, and the weapons must be acceptable to both users and the public. One problem in development has been the need to test and demonstrate the usefulness of the weapons on people.

Less-than-lethal weapons currently being used or under development include:[38]

- electrical devices that deliver a disabling but nonfatal shock—the Taser, the stun gun, and the Talon (a glove with an electrical pulse generator in the palm);
- chemical devices that work either on the central nervous system (e.g., tranquilizers) or peripherally on the body (e.g., tear gas or mace);
- impact devices that include the water cannon or fire hose and various launched soft projectiles, such as rubber bullets, soft rubber rings, bean bags, and small water balloons, some of which may also be filled with chemicals such as mace;
- combinations of the above types might include impact devices that deliver a tranquilizing shot; such weapons are now used by conservation officials in the capture of wild animals for inspection, marking, or treatment;
- marking devices, such as pistols that fire a blob of paint for later identification of fleeing suspects or vehicles; and
- miscellaneous other devices such as explosive light and sound grenades for disorienting people, trip devices, and capture nets.

[38]Some but not all of these devices are described in Sweetman, ibid.

Whenever police kill a suspect or bystander in the process of making an arrest or halting a crime in progress, serious questions arise about the possibility of use of excessive force. This is especially true when the person killed was not guilty of crime, or the crime being committed (or suspected) did not involve direct threat to life, or would not merit capital punishment. Less-than-lethal weapons should thus contribute to protection of constitutional values of law enforcement, due process, and rights of prisoners. That assumes, however, that the new weapons will not be used to exert physical force where it would not otherwise be acceptable—for example, to break up or control "mobs" that are really people exercising their constitutional right of assembly and protest, or to "subdue" suspects that are not really resisting arrest.

When and if nonlethal weapons become effective and widely available, a constitutional challenge could arise regarding the use of lethal weapons; in that situation the use of deadly force by police might be challenged as an unjustified deprivation of life, liberty, or civil rights, as deprivation of due process, or as cruel and unusual punishment. A recent Supreme Court case held that deadly force may not be used unless it is necessary to prevent an escape and then only when the officer has probable cause to believe that a suspect poses a significant threat of death or serious physical injury to the officer or to others.[39] Otherwise, the use of deadly force may be "an unreasonable seizure" under the Fourth Amendment.

[39]For example, the Supreme Court ruled in *Tennessee v. Garner*, 471 U.S. 1 (1985) that use of deadly force in making an arrest, without probable cause to believe the suspect was dangerous, violated the Fourth Amendment prohibition on unreasonable seizures. Previously courts had used a complicated standard based on the 14th Amendment Due Process Clause, inquiring whether the force used caused severe injury, that it was grossly disproportionate to the need for action, and that it was so malicious as to shock the conscious. See for follow-up, Martha Middleton, "Fourth Amendment Rights Are Expanded in Arrests," *National Law Journal*, Oct. 5, 1987.

Chapter 3

New Technology for Decisionmaking: Social Sciences and Computers

In social sciences (including cognitive and behavioral sciences), research is increasingly resulting in direct and rapid practical applications that have discernible effects on social institutions and behavior and the life of individuals. In this regard, the social sciences are now following the model of the physical and biological sciences. Social science research results, expressed most often in the form of statistical probabilities, generalized observations, or theoretical formulations, are used in developing computer models and simulations that are in turn used for planning, decisionmaking aids such as formal guidelines, and resource allocations. In law enforcement and administration of criminal justice, this coming together of developments in social science with advances in computer hardware and software is already having profound effects by shifting the emphasis toward science-based expertise versus experience, pragmatism, and trial-and-error as the basis for processes and procedures.

In the area of criminal justice, new developments in social science, embodied in predictive models and guidelines, may have effects at least as significant as the effects of applications of physical and biological sciences. If properly applied, they have much potential for reducing the undesirable effects of excessive discretion and variability in decisionmaking, which often become discriminatory. But one risk is that they will make the process too rigid or mechanical. Another risk is that these social technologies could be misused in discriminatory ways. They are developed on the basis of information about patterns of behavior across large groups or populations. They should be treated with care in dealing with individuals.

A third concern is that reliance on science and technology may encourage decisionmakers to think of people only as anonymous "offenders" or impersonal "cases."

The criminal justice system operates during different stages of the process at different government levels. Law enforcement is generally a municipal or county function. Prosecution usually occurs at the county or district level. Corrections is usually a State function. Probation decisions are made at either the State or county level, sometimes by the judiciary and sometimes by an executive branch agency.

Officials in law enforcement, prosecution, the courts, corrections, and probation have to decide whom to investigate and prosecute, who is too dangerous to be allowed bail, who might flee to avoid prosecution, or who might commit new crimes if given parole. At each stage they must exercise discretion. Officials have increasingly come to rely on criminal justice research to assist in making these decisions.

Police have the broadest range of discretion in determining whom they will arrest and formally charge with a crime. From among those arrested, prosecutors decide whom they will bring to trial and the number and type of charges they will pursue.[1] The courts subsequently decide the fate of those brought to trial, while corrections deals with those who have been found guilty or have pleaded guilty and have been sentenced by the courts.

The whole process, a flow of offenders from one agency to the next, ties these functionally and structurally distinct agencies into a coherent whole that is our "system" of justice. While this channeling process successively reduces the number of people over whom authority is exercised and decisions are made, each agency retains considerable discretion.

[1]Prosecutors frequently also have the power to empanel grand juries to investigate crime as well as to initiate prosecution from private complaints. F.W. Miller, *Prosecution: The Decision To Charge a Suspect With a Crime* (Boston, MA: Little, Brown & Co., 1970).

The exercise of discretion within the criminal justice system has traditionally been hidden from public view, guided only by the general principles contained in Federal and State constitutions, laws, historical practice, and the intuition of the decisionmaker at each stage. There are many problems associated with the exercise of broad and virtually unfettered discretion. One is inconsistency, both across cases with the same decisionmaker and across different decisionmakers. Those who make decisions are not often required to state why they decided how they did, and what factors they considered. Nor are they required to establish procedures that consistently and accurately measure those factors.

Broad social values determine the variables considered relevant in reaching decisions. At various times in American history, social policy toward criminals has emphasized:

1. retribution and punishment,
2. rehabilitation, and
3. incapacitation or incarceration (keep them off the streets).

With rehabilitation, prediction of future behavior is important both in designing the penalty and judging its probability of success. If retribution governs the administration of justice, predicting future behavior becomes unimportant; the penalty should be that which fits the crime committed (the criminal's "just deserts"). Where selective incapacitation is the controlling social policy, predictions of future behavior are more important, for the objective is to isolate those who are dangerous.[2]

The daily administration of justice thus necessarily entails a considerable amount of prediction of behavior.[3] When one predicts that an offender is dangerous and in fact he is not (a false positive), the consequence is injustice, without reducing the likelihood of future crime. Prediction of success on parole for an offender who subsequently commits a crime (a false negative) fails to prevent additional crime and thus creates a new injury.

[2]Norval Morris and Marc Miller, U.S. Department of Justice, National Institute of Justice, "Predictions of Dangerousness in the Criminal Law," *Research in Brief*, March 1985.

[3]S.D. Gottfredson and D.M. Gottfredson, "Accuracy of Prediction Models," *Criminal Careers and "Career Criminals,"* vol. 2, A. Blumstein, et al. (eds.) (Washington, DC: National Academy Press, 1986), pp. 212-291, at pp. 219-221.

PREDICTIVE MODELS

A number of predictive models have been developed to help in police investigations, or in allocating limited police resources across competing needs and priorities. The Police Executive Research Forum has developed a model to predict which burglary cases are solvable, using a salient factor index developed through computer analysis of old case files. The developers claim 90 percent accuracy. The Illinois Criminal Justice Information Authority is analyzing historical data on crimes in specific communities to develop methods of predicting their incidence and location.[4]

Much research is focused on predictors of criminal recidivism. These studies generally focus on such factors as prior criminal history, age, race, marital status, place of residence, employment, and other demographic variables. Unfortunately, both newspaper reporters and the general public are often either uninformed or careless about the differences between correlation and causality. It then becomes easy for conclusions to be misused in formulating public policy, resulting in discriminatory actions against some racial, ethnic, or age groups.[5]

Research on recidivism increasingly is focusing on the longitudinal sequence of offenses that comprise an offender's "criminal career." A consistent finding is that a small core of

[4]*The Compiler*, the newsletter of the Illinois Criminal Justice Information Authority, vol. 7, No. 3, fall 1986.

[5]For a thoughtful and subtle analysis of this issue, see Daniel Patrick Moynihan, "Social Science and the Courts," *The Public Interest*, No. 54, winter 1979, pp. 12-31.

recalcitrant and very active offenders are responsible for a disproportionately large share of crime. In 1986, a National Research Council Panel reported that "the targeting of high-rate offenders" could produce modest reductions in crime. It recommended that all criminal justice decisions give greater weight to information about juvenile court records, prior criminal activity, and evidence of serious drug use.[6] This panel found that age, race, and sex were not very helpful in distinguishing the career criminal from other offenders.[7]

The real dilemma nevertheless is that in some predictive models, socioeconomic status, race, age, and similar variables have been shown in the aggregate to be useful surrogate indicators; their use may violate sound social policy and constitutional doctrine, but their removal may weaken the usefulness of the models.

These findings have significant policy implications, particularly when considered in light of the burgeoning prison populations that today confront most States and localities. The number of prisoners housed in State and local prisons has significantly outpaced capacity.[8]

In an effort to reduce crime in the most cost-effective way, some jurisdictions are developing innovative strategies for apprehending and prosecuting persistent offenders, based on the models for predicting recidivism. The Repeat Offender Project of the Washington, D.C. police department is one example of offender targeting in which the police concentrated investigative resources on apprehending offenders with characteristics indicating a high probability of repeated offenses.[9] The project is generally considered to have proven effective. The police department worked closely with the U.S. Attorney's office and the American Civil Liberties Union to ensure that their tactics met constitutional standards.

If the police in any way discriminate, for example, by enforcing a local ordinance only against members of a certain minority group, this enforcement would violate the constitutional guarantee of "equal protection of the laws."[10] In regard to both law enforcement and administrative rule-making, statistical proof of discriminatory effect is usually relevant but rarely determinative, although where the statistical proof is overwhelming it may be sufficient to establish a prima facie case. The critical question is whether those who make decisions are using some form of suspect criterion and thereby establishing a classification within the law or its application.

It is more difficult to show such intent on the part of legislative law-making. The Supreme Court has held that a criterion for government employment, such as a score on a written test, is not necessarily discriminatory even if it eliminates more candidates of one race than of another.[11]

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[6]A. Blumstein, J. Cohen, J. Roth, and C. Visher (eds.), *Criminal Careers and "Career Criminals,"* vols. 1 and 2 (Washington, DC: National Academy Press, 1986); A. Blumstein, D. Farrington, and S. Moitra, "Delinquency Careers: Innocents, Desisters, and Persisters," in M. Tonry and N. Morris (eds.), *Crime and Justice: An Annual Review of Research*, vol. 6 (Chicago, IL: University of Chicago Press, 1985); P. Greenwood, with A. Abrahamse, *Selective Incapacitation* (Santa Monica, CA: Rand Corp., 1982); J. Chaiken and M. Chaiken, *Varieties of Criminal Behavior* (Santa Monica, CA: Rand Corp., 1982); J. Petersilia, "Criminal Career Research: A Review of Recent Evidence," N. Morris and M. Tonry (eds.), *Crime and Justice: An Annual Review of Research*, vol. 2 (Chicago, IL: University of Chicago Press, 1980); and J. Petersilia, P. Greenwood, and M. Lavin, *Criminal Careers of Habitual Felons* (Santa Monica, CA: Rand Corp., 1977).

[7]A. von Hirsch, *Doing Justice* (New York, NY: Hill & Wang, 1973), p. 107; Twentieth Century Task Force on Criminal Sentencing, *Fair and Certain Punishment* (New York, NY: McGraw-Hill, 1976); N. Morris, *The Future of Imprisonment* (Chicago, IL: University of Chicago Press, 1974); J. Feinberg, *Doing & Deserving: Essays in the Theory of Responsibility* (Princeton, NJ: Princeton University Press, 1970); and American Friends Service Committee, *Struggle for Justice: A Report on Crime and Punishment in America* (New York, NY: Hill & Wang, 1971).

[8]U.S. Department of Justice, Bureau of Justice Statistics, *Population Density in State Prisons* (Washington, DC: U.S. Department of Justice, 1986), as reported in *Criminal Justice Newsletter* 18, Jan. 2, 1987, p. 4.

[9]For a recent review of other such programs, see W. Gay and W. Bowers, U.S. Department of Justice, *Targeting Law Enforcement Resources: The Career Criminal Focus* (Washington, DC: U.S. Department of Justice, 1985).

[10]In *Yick Wo v. Hopkins*, 118 U.S. 356 (1886) the Court held unconstitutional the enforcement of a San Francisco ordinance banning the operating of hand laundries in wooden buildings. The vast majority of such laundries were owned and operated by Chinese; it was shown that all non-Oriental launderers who had applied for an exemption from the statute had received one, while no Chinese who applied had been granted one.

[11]*Washington* v. *Davis*, 426 U.S. 229 (1976).

A growing volume of research is intended to aid police, prosecutors, and other criminal justice officials in deciding whom to arrest, charge, and parole. But there are ethical questions in the use of prediction. Justice must be equal and fair. It should preclude consideration of racial and ethnic variables which are beyond the offender's control, since that would violate concepts of due process and equal protection. Some scientists are said to have grave reservations about predictive models that use psychological and social factors in predicting behavior, as they might be used in criminal justice decisions.[12]

[12]Alan J. Tomkins, "Psychology and the Constitution," *Psychology Today*, September 1987, pp. 48-50.

Social scientists have recently been studying the working of the jury system, a social technology that has been in use for thousands of years.[13] By means of statistical analysis and computer simulation, they can measure the effects of the demographic characteristics of jurors, their known attitudes (e.g., toward the death penalty), how jurors are chosen, and how they voted. Defense lawyers and prosecutors use the results of such research to develop elaborate strategies for maximizing the chances of winning a desired verdict.

[13]Arnald Urken and Stephen Traflet, "Optimal Jury Design," *Jurimetrics*, Journal of the American Bar Association, vol. 24, spring 1984, p. 218.

DECISIONMAKING GUIDELINES

Other innovative tools have been developed to aid in the complex process of criminal justice decisionmaking. In setting bail judges must consider the likelihood that a defendant will appear at trial. In sentencing, judges may evaluate the danger an offender poses to society as well as his rehabilitative potential. Similarly, correctional officials and parole boards must evaluate the likelihood that an offender will commit another crime after being released from prison.

With regard to sentencing, former U.S. District Judge Marvin Frankel noted in 1973:

> We have in our country virtually no legislative declarations of the principles justifying criminal sanctions . . . [T]his is much more than an aesthetically regrettable lack. It is the omission of foundation stones, without which no stable or reliable structure is possible."[14]

It has been widely recognized for many years that there has been great disparity in parole decisions and in the setting of sentences for similar crimes, both across jurisdictions and within most jurisdictions. Many experts and public interest advocates have pointed out that parole and sentencing decisions are often arbitrary, capricious, and unfair. As a result, innovative tools have been used to develop guidelines for bail, sentencing, and parole that have strengthened the rationality and consistency of such decisions.

The United States Board of Parole (now the U.S. Parole Commission) began to develop guidelines in 1972 that would structure and guide its exercise of discretion.[15] The first task was to model how decisions were then made in order to identify what factors were considered and their relative weights. Thus, the guidelines reflected existing practices and policies of the Parole Board.[16]

[14]M.E. Frankel, *Criminal Sentences: Law Without Order* (New York, NY: Hill & Wang, 1973) p. 107.

[15]For an account of the research project and a description of the guidelines produced, see D.M. Gottfredson, et al., *Classification for Parole Decision Policy* (Washington, DC: U.S. Government Printing Office, 1978); D.M. Gottfredson, L.T. Wilkins, and P.B. Hoffman, *Guidelines for Parole and Sentencing: A Policy Control Method* (Lexington, MA: D.C. Heath, 1978). Also see M.R. Gottfredson and D.M. Gottfredson, *Decisionmaking in Criminal Justice: Toward the Rational Exercise of Discretion* (Cambridge, MA: Ballinger, 1980).

[16]The Commission identified three factors as primary in considering release on parole: 1) the seriousness of the conviction offense, 2) the risk of recidivism if paroled, and 3) the inmate's institutional behavior. The offender's parole prognosis (risk of recidivism) was scored, based on variables which research demonstrated were accurate predictors of parole performance, in-

The guidelines that emerged were to be advisory in nature. The Board could decide to parole a prisoner based on factors that fell outside the recommended range, but they had to provide written explanations of why the case warranted deviation from the guidelines. This became feedback which provided information on how well the guidelines were working, suggesting areas needing possible modification.

To prevent the guidelines from becoming rigid prescriptions, the Parole Board adopted procedures for updating them on the basis of systematic, regular feedback. This created a process for changing the guidelines based on experience.[17]

Critics questioned the propriety of some of the variables chosen as salient factors in decisions.[18] Due process and equal protection preclude consideration of race. A prisoner's job prospects and educational level may be predictive of parole performance, but they may also be strongly correlated with race and/or socioeconomic status. Using these "racially tainted"[19] variables was seen by some critics to be ethically improper if not unconstitutional.

Guidelines have been adopted by a growing number of States over the years for dealing with parole, bail, and sentencing.[20] Congress authorized the U.S. Sentencing Commission in 1985 to create sentencing guidelines at the Federal level.[21] After 18 months of study, the nine-member commission issued its guidelines in April 1987. They are methodologically similar to the parole guidelines.[22]

Congress had provided that the guidelines would take effect automatically unless Congress intervened after a period of congressional review. The Commission can, through amendments, change or add to the initial set of guidelines. Critics say that Congress thereby delegated the power to legislate, and this is probably unconstitutional.[23]

Federal sentencing guidelines took effect November 1, 1987. The guidelines virtually eliminated Federal probation and alternative sentencing (e.g., community service or electronically monitored home arrest, which is discussed later in this report). They also provided for stiffer sentences than have been common in recent years, especially for white collar crime.

Sentencing guidelines are an alternative to both fixed sentences and complete judicial discretion. The latter results in extremely wide variations in sentences for the same crime, while the former prevents judges from considering mitigating factors or factors that might suggest a more severe sentence. With guidelines, judges retain discretion, but must put on record their reasons for not following the guidelines recommendation. Some judges suggest that this explicit rationale may make it

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cluding criminal history, education, employment status, and parole plans. The guidelines were designed as a simple matrix, with offense seriousness ranked on the Y axis and the salient factor score on the X axis. The intersection of the two scores provided the commission with a suggested total amount of time to be served before release on parole.

[17]D.M. Gottfredson, L.T. Wilkins, and P.B. Hoffman, *Guidelines for Parole and Sentencing: A Policy Control Method*, op. cit., footnote 16.

[18]J. Petersilia and S. Turner, *Guideline-Based Justice: The Implications for Racial Minorities* (Santa Monica, CA: Rand Corp., November 1985); J.C. Coffee, "The Repressed Issues of Sentencing: Accountability, Predictability, and Equality in the Era of the Sentencing Commission," *The Georgetown Law Journal* 66 (1978), p. 975; and J.C. Coffee, "The Future of Sentencing Reform: Emerging Legal Issues in the Individualization of Justice," *Michigan Law Review* 73 (1975).

[19]Petersilia and Turner, op. cit., footnote 19, p. 17.

[20]L.T. Wilkins, et al., *Sentencing Guidelines: Structuring Judicial Discretion* (Washington, DC: U.S. Government Printing Office, February 1978).

[21]28 U.S.C.A. 991-998 (West Supp. 1985) [Sentencing Commission established]; U.S.C.A. 3551-3586 (West Supp. 1985) [New Federal sentencing provisions].

[22]A crime is assigned a base score which is adjusted depending on a number of variables (e.g., the weapon used). The adjusted score is then located on a matrix, with the second axis determined by the previous criminal record of the offender. The result is a recommended length of sentence, expressed as a narrow range, e.g., 60 to 72 months.

[23]U.S. Sentencing Commission, *Sentencing Guidelines and Policy Statements* [submitted to Congress Apr. 13, 1987, with amendments submitted Apr. 13, 1987]; *Supplementary Report on the Initial Sentencing Guidelines and Policy Statements* (June 18, 1987). For a representative critique of the commission's work, see Statement of H. Scott Wallace, legislative director, National Association of Criminal Defense Lawyers, before the U.S. Senate Committee on the Judiciary, regarding Federal Sentencing Guidelines, Oct. 22, 1987. For a summary see H. Scott Wallace, "Congressional Abdication," *The National Law Journal*, Dec. 28, 1987—Jan. 4, 1988, p. 13.

more likely that a sentence be appealed, by suggesting strategies for attacking its rationale.

The sentencing guidelines, like those for parole, are likely to be examined closely to see whether they create "classifications" or categories of people for special treatment, thus violating constitutional guarantees of equal protection. However, a statistical showing that some groups or races are differentially affected on a statistical basis would not in itself demonstrate an unconstitutional classification.

An alternative approach is prescriptive, and seeks to develop guidelines based solely on policy choices of criminal justice officials, irrespective of past practices.[24] Minnesota, for example, developed sentencing guidelines rooted in retributive considerations.[25] They excluded predictions about the future behavior of an offender from consideration, concentrating instead on the seriousness of the offense and the offender's criminal history [the latter, however, can be seen as a predictor of dangerous behavior].

Guidelines may promote an active public examination of the purposes underlying important criminal justice decisions, of the primary objectives of our system of justice, and of acceptable methods for obtaining these objectives. The guidelines seek to reduce disparity in the administration of justice, since disparity violates constitutional rights of due process and equal protection.

The use of predictive factors in sentencing decisions made by a jury has been allowed by the Supreme Court, specifically in cases in which there was psychiatric testimony about the likelihood that a defendant would continue to be of danger to the public.[26] A decision in May 1987 appears to have fully vindicated the use of such predictions of behavior in decisions about pretrial detention under the Bail Reform Act of 1984.[27] The Court specifically recognized that Congress passed the act because of the "pressing societal problems of crimes committed by persons on release." In these cases, however, the predictions were based on specific information about the offender as an individual rather than statistical data about groups of people. The issue of suspect categories has not yet been laid to rest.

[24]K. Knapp, "Impact of the Minnesota Sentencing Guidelines on Sentencing Practices," *Hamline Law Review* 5, (1982), p. 237. For thorough discussions of methodological issues associated with designing descriptive guidelines, see F.M. Fisher and J.B. Kadane, "Empirically Based Sentencing Guidelines and Ethical Considerations," in A. Blumstein, et al., *Research on Sentencing: The Search for Reform*, vol. II (Washington, DC: National Academy Press, 1983), pp. 184-193; and R.F. Sparks, "The Construction of Sentencing Guidelines: A Methodological Critique," Ibid., pp. 194-264.

[25]Minnesota Sentencing Guidelines Commission, *Preliminary Report on the Development and Impact of the Minnesota Sentencing Guidelines July, 1982* (St. Paul, MN: Minnesota Sentencing Guidelines Commission), p. 5.

[26]*Barefoot* v. *Estelle*, 463 U.S. 880, 77 L. Ed. 2nd 1090, 103 S. Ct. 3383 (1983).

27.U.S. v. Salerno, 107 S. Ct. 2095, 55 U.S.L.W. 4663 (1987).

ARTIFICIAL INTELLIGENCE

Artificial intelligence is the computer emulation of human intelligence. Significant progress toward application has been made in four areas:

- natural language processing,
- computer vision,
- expert systems, and
- problem solving and planning.

After 30 years of research and development, artificial intelligence (AI) has begun to yield commercially available products[28] in the form of expert systems. These are computer pro-

[28]For a comprehensive review of artificial intelligence, see A. Barr and E. Feigenbaum, *The Handbook of Artificial Intelligence*, vols. 1-3 (Stanford, CA: HeurisTech Press, 1982). Also see R. Forsyth and C. Naylor, *The Hitch-Hiker's Guide to Artificial Intelligence* (London: Chapman & Hall/Methuen, 1986); H.C. Mishkoff, *Understanding Artificial Intelligence* (Indianapolis, IN: Howard W. Sams & Co., 1985); W.B. Gevarter, *Intelligent Machines: An Introductory Perspective of Artificial Intelligence and Robotics* (Englewood Cliffs, NJ: Prentice-Hall, 1985); D. Peat, *Artificial Intelligence: How Machines Think* (New York, NY: Baen Enterprises, 1985); and P.H. Winston and K.A. Predergast (eds.) *The AI Business: Commercial Uses of Artificial Intelligence* (Cambridge, MA: The MIT Press, 1984).

grams or software that embody human expertise in a particular domain of knowledge. They are, in a figurative sense, the cloning of an expert's methods of problem solving.

There are three principal components common to most expert systems: a knowledge base, an inference engine, and a user interface. The knowledge base contains the system's declarative and procedural knowledge, including rules of thumb and procedures for attempting to solve a given problem. The inference engine controls the system's operation by selecting the rules to use, accessing and executing those rules, and determining when a solution has been found. The user interface allows communication between the system and its user. Most use natural language processing.

Some experts believe that expert systems can greatly benefit criminal justice operations, through their ability to institutionalize knowledge and to disseminate rare investigative expertise. Experts in fields such as criminal profiling,[29] forgery, arson, serial murder, and rape investigation can have accrued as much as 30 years of experience in problem solving. When those experts leave a criminal justice agency, they take their expertise with them. Expertise is more than formal knowledge of facts; it is judgment, memory, and ability to compare and synthesize. It is hoped that expert systems can extend the lifetime of personal expertise and the range of its use beyond a particular institution. Small agencies with less experienced people or with no specialists will benefit from transferable expert system programs.

Examples of expert systems being developed for use in criminal justice are:

- *Criminal Profiling for Serial Murder and Rape.*—Under development by the FBI's Behavioral Science Investigative Support Unit at the FBI Academy in Quantico, Virginia.[30]
- *Serology Analysis.*—Under development by the California Department of Justice.
- *Narcotics Interdiction.*—Under development by the FBI's Technical Services Division.
- *Counterterrorism.*—Under development by the FBI's Technical Services Division.
- *Name Searching System for Various FBI Databases.*—Under development by the FBI's Technical Services Division.
- *Organized Crime and Labor Racketeering.*—Called "Big Floyd" and "Little Floyd," these are being developed by the FBI's Technical Services Division.

Except for Big Floyd, these expert systems have not yet proved their feasibility and usefulness, but their developers have high hopes for them.[31] Expert systems could be particularly useful in FBI investigations because, frequently, the most effective investigators are promoted out of investigation and into management positions, and this attrition is compounded by early retirement and other factors. In addition, the Bureau relies heavily on the expertise of local law enforcement officers in the Bureau's narcotics and drug interdiction programs. Expert systems may be a way of capturing and institutionalizing their knowledge before they return to their own jurisdictions.

[29]For a general discussion of criminal profiling, see B. Porter, "Mind Hunters," *Psychology Today*, April 1983, pp. 44-52.

[30]Interview with W. Tafoya, Behavioral Science Investigative Support Unit, Federal Bureau of Investigation, Jan. 5, 1987; interviews with W. Tafoya, D. Icove, and R. Rabussen, Behavioral Science Investigative Support Unit, Federal Bureau of Investigation, Jan. 15, 1987. For discussion of criminal profiling and the expert system being developed by the FBI, see J.E.Douglas and A.E. Burgess, "Criminal Profiling: A Viable Investigative Tool Against Violent Crime," *FBI Law Enforcement Bulletin 55*, December 1986, p. 9; and D.J. Icove, "Automated Crime Profiling," *FBI Law Enforcement Bulletin 55*, December 1986, p. 27.

[31]The Institute for Defense Analyses with the FBI developed "Big Floyd," a labor racketeering expert system, which is able to access and use the data contained in more than 3 million records in the FBI's Organized Crime Information System. The program, which is named for Floyd Clark, head of the Criminal Identification Division, is a very large relational database based on an "entity relation model." Relevant statutes, such as RICO, are also in the system. An investigator can start with a person or organization, look at the statutes and their constituent parts, and ask questions such as: "Do I have enough evidence to charge this person/organization?" The program will analyze all data pertaining to an offender/organization and come to a conclusion. If there is not sufficient evidence, the program will suggest, for example, the kind of additional information that is needed and will suggest that, given the various relationships between individuals in the database, Subject "X" is likely to have data that may implicate the suspect in crimes. The program will also suggest strategies for "turning" X into an informant.

Chapter 4

New Technologies for Correctional Supervision and Treatment

Faced with increasing prison populations, limited capacity, and rising prison construction costs, criminal justice officials have intensified their search for alternatives to incarceration. In doing so, they need to keep in mind the Eighth Amendment prohibition of cruel and unusual punishment, and the guarantees of due process in the Fifth and Fourteenth Amendments.

The penitentiary, as an institution of punishment, is a relatively modern invention. Conceived in the late 1700s as an alternative to the capital and corporal punishments then widely used,[1] the penitentiary was designed to produce penitence and reformation of the inmate:

> By sobriety, cleanliness, and medical assistance, by a regular series of labour, by solitary confinement during the intervals of work, and by due religious instruction to preserve and amend the health of the unhappy offenders, to inure them to habits of industry, to guard them from pernicious company, to accustom them to serious reflection and to teach them both the principles and practice of every Christian and moral duty.[2]

After an initial period of experimentation with different methods of confinement, the Auburn, New York, system of congregate work during the day and solitary confinement at night was adopted as the model upon which most penal institutions in the United States were subsequently built.[3] Penitentiary confinement became the dominant mode of treatment for serious offenders. Penal colonies, another alternative, were widely used by some countries, England included; the State of Georgia and Australia were first settled in this way.

Correctional practices are shaped in large measure by the current penal philosophies. As already noted, rehabilitation, incapacitation, and retribution have at different times been the primary objectives of criminal justice.[4] There has been much debate during the past decade about rehabilitation. Once highly touted, recent studies have challenged its effectiveness and its basic fairness.[5] Retributive aims of punishment have had a popular resurgence and are the basis of reforms aimed

[1]The Walnut Street jail in Philadelphia is generally credited as being the first penitentiary to which offenders were sentenced as punishment. See E.H. Sutherland, *Criminology* (Philadelphia, PA: J.B. Lippincott, 1924), pp. 391-396; H.E. Barnes and N.K. Teeters, *New Horizons in Criminology*, 2d ed. (New York, NY: Prentice-Hall, 1952), pp. 381-398.

[2]Quoted in Sutherland, *Criminology*, op. cit., p. 395. Sutherland notes that this description of the purpose of penitentiary confinement actually comes from an English law, dated 1778 and penned by Blackstone, Eden, and Howard, authorizing a penitentiary. Although the institution was not built, the law likely influenced the Quakers of Pennsylvania, who were responsible for the system of discipline adopted at the Walnut Street jail.

[3]A considerable historic controversy revolved around the Pennsylvania system, which prescribed solitary confinement day and night, and the Auburn system, in which prisoners worked together but in silence during the day, and were confined in solitude at night. Protracted periods of solitary confinement, however, were found to produce a variety of ills, including insanity and self-mutilation. Sutherland, *Criminology*, op. cit., footnote 1, pp. 396-399; Barnes and Teeters, *New Horizons in Criminology*, op. cit., footnote 1, pp. 402-416; M. Ignatieff, *A Just Measure of Pain: The Penitentiary in the Industrial Revolution 1750-1850* (New York, NY: Pantheon, 1978), pp. 194-196.

[4]H.L.A. Hart, "Prolegomenon to the Principles of Punishment," in *Punishment and Responsibility* (Oxford: Clarendon Press, 1968) pp. 1-13; G. Ezorsky (ed.), *Philosophical Perspectives on Punishment* (Albany, NY: State University of New York Press, 1972); J.B. Cederblom and W.L. Blizek (eds.), *Justice and Punishment* (Cambridge, MA: Ballinger, 1977).

[5]D. Lipton, R. Martinson, and J. Wilks, *The Effectiveness of Correctional Treatment: A Survey of Treatment Evaluation Studies* (New York, NY: Praeger Publishers, 1975); W.C. Bailey, "Correctional Outcome: An Evaluation of 100 Reports," *Journal of Criminal Law and Criminology*, 57 (1966), p. 153. American Friends Service Committee, *Struggle for Justice: A Report on Crime and Punishment in America* (New York, NY: Hill & Wang, 1971); Twentieth Century Fund Task Force on Criminal Sentencing, *Fair and Certain Punishment* (New York, NY: McGraw-Hill, 1976); A. von Hirsch, *Doing Justice* (New York, NY: Hill and Wang, 1976); N. Morris, *The Future of Imprisonment* (Chicago, IL: University of Chicago Press, 1974).

at greater uniformity and determinancy to sentencing.[6]

As a result of these reforms, which include preventive detention, determinate sentencing, habitual-offender statutes, and in some jurisdictions the abolition of parole, as well as the coincident aging of the baby boom generation, prison populations have increased dramatically. Despite much State prison construction since the early 1980s, the living conditions of prisoners were more crowded in 1984 than in 1979. Prison housing space increased by 29 percent during that period, but the number of prisoners grew by 45 percent.[7]

The new approaches considered in this chapter are all intended to provide alternatives to conventional prisons: commercial or privatized prisons and community service, electronically monitored home arrest, and drug or hormonal therapy and related methods of behavior modification.

[6]A. Lipson and M. Peterson, *California Justice Under Determinate Sentencing: A Review and Agenda for Research* (Report No. R-2497-CRB prepared for the State of California, Board of Prison Terms, 1980); S. Lagoy, T. Hussey, and J. Kramer "A Comparative Assessment of Determinate Sentencing in the Four Pioneer States," *Crime & Delinquency*, vol. 24 (1978), p. 385; S. Messinger and Johnson, "California's Determinate Sentencing Statute: History and Issues," *Determinate Sentencing: Reform or Regression?* (Washington, DC: U.S. Government Printing Office, 1978), pp. 13-58.

[7]U.S. Department of Justice, Bureau of Justice Statistics, *Prisoners in 1985* (Washington, DC: U.S. Department of Justice, June 1986). BJS reports that the prison population rose by 8.4 percent in 1985 to a record 503,601 inmates. This is the third largest increase in the absolute number of additional inmates since prisoner statistics were first collected in 1926. A recent report of the U.S. Bureau of Justice Statistics indicates that the number of prisoners housed in State prisons has significantly outpaced capacity. U.S. Department of Justice, Bureau of Justice Statistics, *Population Density in State Prisons* (Washington, DC: U.S. Department of Justice, 1986), reported in *Criminal Justice Newsletter*, vol. 18, Jan. 2, 1987, p. 4.

ALTERNATIVES TO CONVENTIONAL OR TRADITIONAL PRISONS

Jurisdictions across the country have intensified their search for viable alternatives to prison. One controversial alternative that several States are seriously considering is the privatization of correctional facilities, or turning correctional facilities over to privately owned companies to run. The issue of such "prisons-for-profit" is heatedly debated by criminal justice experts.

The American Bar Association (ABA), in February 1986, urged States not to contract with the private sector to operate correctional facilities until a variety of constitutional and legal issues were resolved, although no constitutional issues were specified. A year later, the ABA's criminal justice section initiated a study of statutory and contractual issues regarding privatization, with the goal of researching the legal issues and developing a model statute and contract.[8]

But in fact, commercial jails are already in operation. A television commercial shows a man being arrested and led away in handcuffs, followed with the message:

> If you've been arrested, there's an alternative to going to jail, called "alternative sentencing." The people to call are Behavioral Systems Southwest. Call us and we'll give you the information.[9]

The alternative operates in California for people who have pleaded guilty to a nonviolent crime, have been sentenced 90 to 120 days, are willing and able to pay about $1,000 per month, and have the permission of the sentencing court. It involves part-time confinement in a motel-type facility operated by a private company, while the offender carries on his or her regular job during workdays. There are several such facilities in California and other States.

[8]I.P. Robbins, "Privatization of Corrections: Defining the Issues," *Federal Probation*, vol. 50, September 1986, p. 24.

[9]"Paying for Your Own Incarceration," *D&B Reports*, vol. xxxv, No. 1, January/February 1987, pp. 13-14.

Another strategy is to divert from prison those offenders who can safely and successfully be treated in the community. Alternatives include fines, probation, suspended sentences, restitution to the victim, and community service. Pre-release programs, such as work release and halfway houses, shorten the duration of an inmate's term and provide a transitional stage between incarceration and full release, but are not really alternatives to prison because they follow incarceration.

The major constitutional question in regard to all of these alternatives to conventional imprisonment is the question of equity in their application. To the extent that they offer desirable alternatives, such policies and programs may be challenged on the basis of discrimination (i.e., under the Equal Protection and Due Process Clauses) if they are available only to those who can pay for them, or if candidates are categorized or classified in ways that the Supreme Court has found to be suspect.

ELECTRONIC MONITORING

The concept of electronically monitoring the location of parolees and probationers is not new. Dr. Ralph Schwitzgebel, a member of Harvard's Science Committee on Psychological Experimentation, described in 1964 a system of "electronic parole" whereby a portable transceiver device could monitor a parolee's location 24 hours a day. Researchers enthusiastically suggested that "when specific offending behaviors can be accurately predicted and/or controlled within the offender's own environment, incarceration will no longer be necessary as a means of controlling behavior and protecting society."[10]

Parolees, mental patients, and researchers in Cambridge and Boston, Massachusetts wore the tracking devices between 1964 and 1970 to assist in developing the technique.[11] A patent was issued for the device in 1969.[12]

Publicity about the electronic tracking device generated proposals that included adding a microphone to transmit whatever the wearer heard or said; transmitters that might broadcast signals from sensors recording blood alcohol levels or other physiological data; and brain monitors to determine if the wearer was asleep, alert, or emotionally agitated. Another suggestion was the creation of a surveillance system that would combine individual, personally worn transponders with transceiver units strategically placed in buildings and alongside streets. This large-scale monitoring system was designed to "transform crime deterrence into a problem in information processing, and real-time cautioning by radio signals."[13]

Nevertheless, the development of electronic monitoring devices made few advances until the early 1980s when prison overcrowding created great demand for alternatives and the market became attractive enough to encourage commercialization.

[10]R.K. Schwitzgebel, R.L. Schwitzgebel, W.N. Pahnke, and W.S. Hurd, "A Program of Research in Behavioral Electronics," *Behavioral Science*, vol. 9, 1964, pp. 233-238.

[11]The subjects in a 1969 study ranged from an offender with over 100 arrests and 8 years of incarceration to a young businessman with no criminal history. R.K. Gable (formerly Schwitzgebel), "Application of Personal Telemonitoring to Current Problems in Corrections," *Journal of Criminal Justice* 14, (1986) p. 168.

[12]Ibid., p. 176. *R.K. Schwitzgebel and W.S. Hurd* (1969). "Behavioral supervision system with wrist carried transceiver," Patent No. 3,478,344.

[13]Note, "Anthropotelemetry: Dr. Schwitzgebel's Machine" [Hereinafter cited "Schwitzgebel's Machine"], *Harvard Law Review*, vol. 80 (1966), pp. 403-404 See U.S. Congress, Senate Committee on the Judiciary, *Hearings on Invasions of Privacy (Government Agencies) Before the Subcommittee on Administrative Practice and Procedure of the Senate Committee on the Judiciary*, 89th Cong., 1st sess., pt. I, pp. 14-63, 323-324 (1965). R.S. MacKay, "Radio Telemetering From Within the Body, *Science*, vol. 134, October 1961, p. 1196; I.J. Young and W.S. Naylor, "Implanted Two Way Telemetry in Laboratory Animals," *American Journal of Medical Electronics*, vol. 3, January/March 1964, pp. 28-33; D.B. Lindsley, "The Recticular Activating System and Perceptual Integration" in D. Sheer (ed.), *Electrical Stimulation of the Brain: An Interdisciplinary Survey of Neurobehavioral Integrating Systems* (Austin, TX: University of Texas Press, 1961), p. 331; and J.A. Meyer, "Crime Deterrent Transponder System," *Institute of Electrical and Electronic Engineers Transactions on Aerospace and Electronic Systems* 7 (1971), pp. 2-22.

One of the first successful personal telemonitoring devices was the "GOSSlink" electronic bracelet, inspired by the Spiderman comic strip. In 1977, New Mexico District Court Judge Jack Love became intrigued with a cartoon in which a villain strapped a special bracelet on Spiderman's wrist to track the hero's whereabouts. Judge Love wrote to his State's corrections department, enclosing a copy of the comic strip and a news article about transmitting devices that could track cargo and animals. Nothing came of the idea for 4 years; then crowding in the county jail motivated the judge to contact several companies to discuss the feasibility of the device. He convinced Michael Goss, a computer salesman, to quit his job to design and produce it. Goss established National Incarceration Monitor and Control Services (NIMCOS) and developed an electronic bracelet that could be used to monitor probationers. In 1983, after wearing the bracelet himself for 3 weeks, Judge Love ordered a probation violator to wear the device; and later added four additional offenders.[14]

Since 1983, approximately 20 jurisdictions in 13 States have used electronic monitoring devices in probation and parole, presentence probation, work release, or house arrest programs.[15] At least 12 companies are involved in making electronic monitoring equipment for correctional use.[16] An appraisal of an electronic monitor, funded by the National Institute of Justice (NIJ), concluded that active

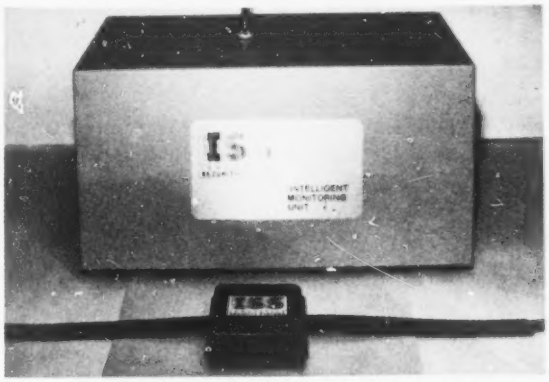

Photo credit: Innovative Security Systems, Cupertino, CA

The electronic bracelet and monitor allow some offenders to remain in the home and aid in monitoring those on probation or parole.

monitors have "promise" as an alternative to traditional incarceration.[17]

Electronic systems can monitor an offender's presence in a specific environment, usually the home, during curfew hours or during the entire day. They include:

- telephone calls to probationers during curfew hours;
- computerized telephone calls to the probationer that require voice and electronic identification;
- transmitting devices worn by the probationer that emit radio signals to a receiver attached to the phone, that, in turn, communicates with a receiver.[18]

Some house-arrest programs involve electronic monitoring; all electronic monitoring systems involve house arrest. Depending on the design, equipment can monitor offenders intermittently or continually and are thus called "passive" or "active" systems. Passive monitoring systems have an automated caller programmed to dial the probationer's home.

[14]Criminal Justice Newsletter, vol. 15, Mar. 15, 1984, p. 4.

[15]The number of electronic monitoring programs is growing rapidly, making a count difficult. In January 1986, the Texas Criminal Justice Policy Council conducted a 6-month feasibility study, surveying 10 programs located in 7 States. In December 1986, the National Institutes of Justice (NIJ) reported that 45 programs were operating in 20 States; NIJ is reviewing these programs. See J.B. Vaughn, *Potential Applications for Electronic Monitoring and House Arrest in the State of Texas* (Huntsville, TX: Sam Houston State Universit; ·ily 1986) [Hereinafter cited *Potential Applications*]. In addition, in October and November 1986, EMT Group, Inc. surveyed 20 programs in 12 States. T. Armstrong, G. Reinger and J. Phillips, *Electronic Surveillance: An Overview* [draft report] (Sacramento, CA: The EMT Group, December 1986).

[16]C.M. Friel and J. B. Vaughn, "A Consumer's Guide to the Electronic Monitoring of Probationers," *Federal Probation*, vol. 50, September 1986, p. 4.

[17]See R.K. Gable, "Applications of Personal Telemonitoring to Current Problems in Corrections," *Journal of Criminal Justice*, vol. 14, 1986, p. 169; W. Niederberger and W.F. Wagner, U.S. Department of Justice, National Institute of Justice, "Electronic Monitoring of Convicted Offenders: A Field Test," *Report to the National Institute of Justice*, 1985.

[18]Friel and Vaughn, op. cit., footnote 16, p. 4.

They are frequently used in conjunction with a wristlet encoder device that the probationer inserts into a verifier box attached to the telephone. The verifier box sends a signal to a computer, which records a violation if the telephone is not answered or the bracelet is not inserted. Such systems are relatively inexpensive, simple to operate, and free of false alarms.

Some systems also use computerized "voice verification" to ensure that the respondent is actually the offender.[19] One system has an optional second test that requires the offender to repeat a series of digits, using the telephone's touchtone keys. This tests manual dexterity as a possible indication of drug or alcohol use.

Active monitoring systems usually consist of three components:

1. a transmitter device worn by the offender around the ankle, neck, or wrist, which transmits an encoded signal at regular intervals over a range of approximately 200 feet;
2. a receiver unit located in the offender's home that detects signals from the transmitter and periodically reports to a central computer; and
3. a control computer located at the criminal justice agency that accepts reports from the receiver unit over telephone lines, compares them with the offender's curfew schedule, and alerts correctional personnel to unauthorized absences.

The ankle transmitter used in several active monitoring systems is about the size of a cigarette package, weighs about 5 ounces, and is strapped around the leg above the ankle with a strap containing an electronic circuit that detects tampering and sends an alarm to the receiving unit.[20]

Most of these programs have only been in existence for a few years and typically involve a small number of screened offenders, making evaluation preliminary and perhaps misleading.[21] Electronic monitoring costs more than traditional probation, but less than prison confinement. Society and the prisoner benefit from the latter's continued ability to work and support himself and perhaps a family. Such programs add to tax revenues, reduce welfare costs, and relieve the need to build additional prisons. They also allow a prisoner to retain family and community ties. This is a benefit if those ties are healthy and supportive, but there is also the risk of continuing unhealthy associations—e.g., access to liquor and drugs.

A potential societal risk is that of widening the net of social control. Some critics contend that there will be a tendency to criminalize all mildly socially unapproved behavior or to sanction longer terms or other harsher penalties for minor misdemeanors. Society derives no benefit if offenders who would otherwise have successfully been placed on probation without monitoring are now electronically tracked. For these people, a less costly probationary program would have proven just as effective and the level of social control less intrusive, yet consistent with their rehabilitation and the protection of society. If it is used for serious felons, there is the possibility that they will elude monitoring long enough to commit other crimes.

Some people think that the use of house arrest and monitoring devices has "Orwellian overtones";[22] others rejoin that surveillance by a computer is less intrusive than confinement in a prison.[23]

[19]Vaughn, op. cit., footnote 15, p. 23.

[20]G. Kennedy, Control Data Corp., Minneapolis, MN, interview conducted Apr. 11, 1985, reported in R.v.del Carmen and J. Vaughn, "Legal Issues in the Use of Electronic Surveillance in Probation," *Federal Probation*, vol. 50, June 1986, pp. 60-61 [Hereinafter cited "Legal Issues"].

[21]B. Berry, "Electronic Jails: A New Criminal Justice Concern," *Justice Quarterly*, Mar. 2 1985, pp. 1-22; Friel and Vaughn, op. cit., footnote 16; J. Petersillia, "Exploring the Option of House Arrest," *Federal Probation*, vol. 50, June 1986, pp. 50-55.

[22]R.A. Ball and J. Lilly, "The Potential Use of Home Incarceration With Drunken Drivers," in J E. Scott and T. Hirschi (eds.), *Critical Issues in Criminal Justice* (Beverly Hills, CA: Sage, 1984). B. Beck, "Commentary: Issues in the Use of an Electronic Rehabilitation System With Chronic Recidivists," *Law and Society Review*, May 3, 1969, pp. 111-114.

[23]B.L. Ingraham and G. Smith, "Use of Electronics in Observation and Control of Human Behavior," *Issues in Criminology* 7, fall 1972, pp. 35-53.

There are several constitutional questions. The first issue involves the Fourth Amendment guarantee of "the right of the people to be secure in their persons, houses, papers, and effects. . . ."[24] Electronic monitoring coupled with home arrest is typically used with those who otherwise would be in prison, that is, they are probationers. The courts have consistently held that probationers enjoy only a restricted scope of constitutional protection.[25] They have somewhat broader protections than confined prisoners,[26] but less than the general public.

Electronic monitoring is also used in pretrial releases, where the issue is less clear-cut. Although the Supreme Court has ruled that the rights of pretrial detainees are subordinate to maintaining order and security,[27] defendants released pending trial continue to enjoy the presumption of innocence. Although their release may be subject to conditions in order to ensure their appearance at trial, they have not been convicted of a crime nor do they suffer the legal disabilities of convicted felons. In these cases, the courts often defer final disposition of the case while the defendant serves a term of probation. The defendant typically enters a guilty plea, but the court withholds final judgment until probation is completed. Assuming it is completed without incident, the court may then dismiss the case, thus averting the stigma of a criminal record.

Sentencing courts are given wide latitude in setting the terms of probation, including restricting the probationer's exercise of constitutional rights,[28] but they do not have completely unfettered discretion in establishing conditions or release.[29] Generally, conditions of probation must have a reasonable relationship to the treatment of the accused and the protection of the public.

Requiring an offender to abide by a curfew is not an infrequent condition of probation, one that has not been found to violate the probationer's rights nor to be an abuse of judicial discretion.[30] The courts are likely therefore to find no violation of Fourth Amendment rights where probationers are ordered to stay within their own homes for prescribed hours (tantamount to a curfew), and where an electronic monitor is used simply to verify the probationer's compliance. When probationers have agreed to conditions, the courts have generally held that they have effectively waived the exercise of any constitutional rights abridged by the conditions. For example, a defendant's agreement to probation on the condition that she submit to polygraph examination effectively waived any Fourth or Fifth Amendment claims. The Court said that the defendant's waiver was voluntary despite the unattractive choice between agreement to the condition or imprisonment.[31]

[24]Several contemporary papers provide an overview of the legal and constitutional issues surrounding the use of electronic monitoring equipment. See del Carmen and Vaughn, "Legal Issues," footnote 20; see note 111, p. 60; Note, "Electronic Monitoring of Probationers: A Step Toward Big Brother?" *Golden Gate Law Review* 14 (1984), p. 431; Berry, "Electronic Jails," Friel and Vaughn, "Consumers Guide."

[25]*State* v. *Culbertson*, 563 P. 2d 1224 (Or. Ct. App. 1977); *United States v. Consuelo-Gonzales*, 521 F. 2d 259 9th Cir. 1975); *Malone v. United States*, 502 F. 2d 554 (9th Cir. 1974), *cert. denied*, 419 U.S. 1124 (1975); *People v. Mason*, 488 P. 2d (Cal. S. Ct, 1971); *In re Martinez*, 463 P. 2d 734 (Cal S. Ct. 1970). Also see Note, "Fourth Amendment Limitations on Probation and Parole Supervision," 1976 *Duke Law Journal* 71 (1976).

[26]*Hudson* v. *Palmer*, 468 U.S. 517 (1984) [Prisoners have no reasonable expectation to privacy in their cells, or in property in their cells, entitling them to the protection of the Fourth Amendment against unreasonable searches]; *Block v. Rutherford*, 468 U.S. 576 (1984) [Prisoners have no right to be present when authorities search their cells].

[27]*Bell* v. *Wolfish*, 441 U.S. 520 (1979).

[28]*State* v. *Cooper*, 282 S.E. 2d 439 (NC S. Ct. 1981); *State v. Sprague*, 629 P. 2d 1326 (Or. Ct. App. 1981); *Malone v. United States*, 502 F. 2d 554 (9th Cir. 1974), *cert denied*, 419 U.S. 1124 (1975); *People v. Mason*, 488 P. 630 (Cal. S. Ct. 1971); *In re Bushman*, 463 P. 2d 727 (Cal. S. Ct. 1970); *In re Martinez*, 463 P. 2d 734 (Cal. S. Ct. 1970).

[29]Conditions which unnecessarily encumber the exercise of constitutional rights, bear little or no relationship to the rehabilitation of the offender or the protection of society, impose impossible burdens on the probationer, are vague, or require banishment of the offender have been struck down by the courts. See, *United States v. Abushaar*, 761 F. 2d 954 (3rd Cir. 1985); *Panko v. McCauley*, 473 F. Supp. 325 (E.D. Wisc. 1979); *People v. Smith*, 232 N.W. 397 (S.Ct. Mich., 1930); *People v. Dominguez*, 256 C.A. 2d 623 (1967); *Sweeney v. United States*, 353 F. 2d 10 (7th Cir. 1965); *Dear Wing Jung v. United States*, 312 F. 2d 73 (9th Cir. 1962).

[30]*State v. Sprague*, 629 P. 2d 1326 (Or. Ct. App. 1981); *Johnson v. State*, 291 S.E. 2d 94 (Ga. S. Ct. 1981); *State v. Cooper*, 282 S.E. 2d 436 (NC S. Ct. 1981).

[31]*State v. Wilson*, 521 P. 2d 1317 (Or. Ct. App. 1974) See the earlier *Zap v. United States*, 328 U.S. 624 (1946) [Fourth Amend-

On the other hand, home arrest and electronic monitoring could be held to violate the Equal Protection of the Laws Clause, if such programs remain limited to a small percent of all offenders.[32] The alternative of incarceration is for most people probably much more undesirable. Most electronic monitoring programs require the probationer to have a home and a telephone line and to pay the costs associated with the program. The Equal Protection of the Laws Clause could be involved if participation is denied to those defendants who cannot pay the program's costs. In a recent case[33] the Supreme Court held that a defendant's probation could not be revoked for failure to pay a court ordered fine and make restitution when the defendant was unable to pay.

This issue could become even more important if the AIDS epidemic increases the risks entailed in incarceration. The disparity between alternative punishments for the same offense would then seem much greater. Since maintaining a prisoner almost certainly costs much more than electronic monitoring, it may be cheaper to forego user fees. However, this would still not solve the problem of the offender with no settled abode, no telephone, and no employment.

There are additional policy issues to be considered in electronic monitoring that probably do not impinge on constitutional protections; for example, the rights of others in the family or household. The electronic monitoring devices presently used with home arrest transmit neither images nor oral communications, only a radiofrequency signal indicating the presence of the probationer within the prescribed range of the transceiver. Earlier electronic surveillance cases restrict the use of electronic monitoring devices that operate with the principal aim of eavesdropping and seizing video or audio evidence against a suspect.

ment rights may be waived, and where defendant specifically agreed to governmental inspection of his business records, in order to obtain the government's business, he voluntarily waived any claims to privacy with regard to his records].

[32]"... No State shall ... deny to any person within its jurisdiction the equal protection of the laws." *United States Constitution, Article, XIV.*

[33]*Bearden v. Georgia*, 461 U.S. 660 (1983).

DRUG THERAPY AND HORMONE MANIPULATION

Many scientists think it will become increasingly possible in the future to identify biochemical or hormonal factors in human behavior and eventually to modify behavior by manipulating these factors. A popular film of the early 1970s, "A Clockwork Orange," explored the implications of behavior modification for controlling antisocial or criminal behavior. Already a few, relatively ineffective forerunners of these biological technologies are being used or experimented with in criminal justice. These include Antabuse for those whose offenses are related to alcohol abuse, and Depo-Provera for sexual offenders. These early examples have raised a large number of objections: that they allow criminals to escape punishment, that they violate professional ethics, that they dehumanize the subjects, that they are unconstitutional as "cruel and unusual punishment," and that they are unconstitutional because they are not equally available to all offenders as a substitute for punishment, or as a needed medical treatment. A closer look at Antabuse and Depo-Provera may help in evaluating these objections.

Antabuse and Alcohol

Antabuse is used to treat alcoholism. While alcoholism is not a crime, public intoxication, disturbing the peace, disorderly conduct, and driving under the influence of alcohol are. The recent get-tough attitude toward drunk driving has resulted in strictly enforced laws that may include jail terms. This could further burden the criminal justice system and worsen the shortage of prison cells, but still do little to

solve the underlying problem by preventing recurrence or deterring potential offenders.

Traditional treatment for alcoholism, based on the view of alcoholism as a disease, includes counseling, group therapy, and support networks, such as Alcoholics Anonymous. Such treatment is effective only when it is voluntary and actively sought. Some research indicates that when appropriately applied, either the administration of drugs or behavioral modification programs, including chemical and electrical aversion conditioning, may be as effective as the more conventional forms of treatment.[34]

Tranquilizers are among the most frequently prescribed drugs for the treatment of alcoholism.[35] First introduced in the 1950s, they may relax a person and relieve anxieties or tension without seriously impairing judgment or alertness. Hypnotics are also frequently prescribed. These drugs must be carefully monitored because the alcoholic may simply substitute dependency upon the drugs for alcohol.

Disulfiram, commonly known as Antabuse, is used in quite a different manner. It is a water soluble, almost tasteless tablet that is incompatible with alcohol. Alcohol in interaction with Antabuse causes extreme nausea or vomiting, difficulty in breathing, headaches, blurred vision, and a marked drop in blood pressure. Antabuse blocks the complete breakdown of alcohol in the body, making the imbiber ill from the accumulation of toxic byproducts. One must wait 72 hours after taking Antabuse before drinking. When used in a treatment program, the drug is frequently used in conjunction with psychotherapy.[36]

Antabuse conditions deterrence by the fear or expectation of severe reaction to alcohol. It provides drinkers with social justification for abstinence;[37] enhancing their ability to benefit from more traditional group or individual therapy by keeping them out of trouble with the law.[38] Research has indicated, however, that the success of the drug may be due more to psychological factors than to the physical reaction, and that only highly motivated persons are appropriate candidates for treatment.[39] The trouble with Antabuse treatment, in lieu of conventional punishment, is that the alcoholic may terminate the medication and resume drinking.

Depo-Provera and Sex Offenses

A more controversial form of drug therapy for criminals is Depo-Provera. In recent years, the number of serious sex offenses, notably forcible rape, has increased considerably,[40] or, as some claim, society is ceasing to condone or ignore these crimes and they are more often reported. In addition, there seems to have been a big increase in sex offenses involving children. Again, this increase may represent in part a growing inclination to report such crimes. Sex offenders seem particularly likely to repeat their crimes after punishment.[41]

The sexual offender may be, but is not necessarily, violent. He is a person who "seeks sexual gratification through inappropriate means, such that the sexual activity or the repercussions of the sexually exciting behavior are harmful to self or others." A distinction

[34]G. Litman and A. Topham, "Outcome Studies on Techniques in Alcoholism Treatment," in M. Galanter (ed.), *Recent Developments in Alcoholism, Volume 1* (New York, NY: Plenum Press, 1983), p. 187.

[35]H.H. Siegel, *Alcohol Detoxification Programs: Treatment Instead of Jail* (Springfield, IL: Charles C. Thomas Publisher, 1973), p. 56.

[36]Ibid., p. 57.

[37]D.F. Horrobin, *Alcoholism Treatment*, Alcohol Research Review Series, vol. 5 (New York, NY: Human Sciences Press, 1980), p. 133.

[38]W. Poley, G. Lea, and G. Vibe, *Alcoholism: A Treatment Manual* (New York, NY: Gardner Press, Inc., 1979), p. 61.

[39]Horrobin, *Treatment*, op. cit., see note 130, pp. 133-134, and Poley, et. al., *Alcoholism: A Treatment Manual*, op. cit., 1979, see note 131, p. 61.

[40]The FBI Uniform Crime Reports indicate a 74-percent increase in reported rapes between 1971 and 1981, and a 57-percent increase in aggravated assault for the same period. U.S. Department of Justice, Bureau of Justice Statistics, *Report to the Nation on Crime and Justice* (Washington, DC: U.S. Department of Justice, 1983), p. 9. In addition, from 1984 to 1985 the number of forcible rapes increased 3.7 percent. U.S. Department of Justice, Federal Bureau of Investigation, *Uniform Crime Reports for the United States* (Washington, DC: U.S. Department of Justice, 1985), p. 13.

[41]L.R. Tancredi and D.N. Weisstub, "Forensic Psychiatry and the Case of Chemical Castration," *International Journal of Law and Psychiatry* 8 (1986), p. 259.

is often made however between "sex offenses" (a legal term) and sexual deviation disorders (a medical term).[42] But even where sexual offenses against victims do not involve physical damage, there is often significant emotional damage.[43]

Some experts identify four primary types of sex offenders:[44]

1. *denying* offenders who deny their crime or the criminal nature of the crime (i.e., they claim the rape was consensual or the pedophilia was initiated by the prepubertal child);
2. *disinhibited* offenders who confess to the crime but claim their behavior was due to nonsexual factors such as alcohol, drugs, or stress;
3. *violent* offenders who appear to be motivated primarily by some nonsexual force, such as anger or drive for power; and
4. *paraphiliac* offenders, especially males, in which fantasy or the actuality of a specific deviation accompanies nearly every sexual arousal; or with "recurrent, persistent fantasies about deviant sex . . . erotic cravings perceived as noxious when frustrated . . . and relatively stereo-typed sexual activity."

   Paraphiliac behaviors may include fetishism, transvestism, sadism, masochism, pedophilia, exhibitionism, and voyeurism. More violent illegal behaviors, such as rape and incest, and the lack of sexual impulse control may be associated with paraphiliacs or with other psychiatric disorders, such as schizophrenia.

At certain periods there has been a strong tendency to subject sex offenders not to punishment, but to treatment. In the search for new approaches for managing sex offenders, there is no clear consensus on which sexual offenders are "sick" and merit compassion and treatment, and which are "evil" and merit severe punishment. Many people are ambivalent and troubled on this subject. Nor is there unanimity among either medical or law enforcement experts. This contributes to the high degree of inconsistency in treatment of sex offenders. Knowledge and theory in this area are both inadequate, and research is hampered by the peculiar difficulties of obtaining data on sexual behavior, which makes diagnosis and effective treatment difficult.

Traditional treatment of sex deviants takes several forms: mental health therapy, psychotherapy, life skills training, behavior modification, and hormonal manipulation. Increasingly, behavior change programs involve a combination of methods and techniques, and almost always include some form of counseling and peer group treatment.[45] Other strategies use a variety of aversive conditioning techniques, including electric shock treatments, shame-aversion, and covert sensitization.[46] Few if any treatment methods have been proven effective in significantly reducing the incidence or recurrence of sexually deviant or dangerous behaviors.

One mildly promising but controversial treatment for use with certain sex offenders is hormonal manipulation through injection of

[42]F.S. Berlin and C.F. Meinecke, "Treatment of Sex Offenders With Antiandrogenic Medication: Conceptualization, Review of Treatment Modalities, and Preliminary Findings," *American Journal of Psychiatry* 138 (1981), pp. 601-646, at p. 602 [Hereinafter cited "Treatment of Sex Offenders"]. See also, P. Walker and W. Meyer, "Medroxyprogesterone Acetate for Paraphiliac Sex Offenders," in J.R. Hays, T.K. Roberts and K.S. Solway (eds.), *Violence and the Violent Individual* (Jamaica, NY: Spectrum Publications, 1981), pp. 354-356.

[43]J. Kelly and J. Cavanaugh, "Treatment of the Sexually Dangerous Patient," *Current Psychiatric Therapies* 21 (1982), p. 101 [Hereinafter cited "Sexually Dangerous"].

[44]Ibid.

[45]D.J. West, "Sex Offenses and Offending," in M. Tonry and N. Morris (eds.), *Crime and Justice: An Annual Review of Research*, vol. 5 (Chicago, IL: University of Chicago Press, 1983), p. 216. Comprehensive surveys of programs in the United States include E.M. Brecher, *Treatment Programs for Sex Offenders* (Washington, DC: U.S. Government Printing Office, 1978); B. Delin, *The Sex Offender* (Boston, MA: Beacon Press, 1978). Also see *Report on Nationwide Survey of Juvenile and Adult Sex-Offender Treatment Programs and Providers* (Syracuse, NY: Safer Society Press, 1986). [Hereinafter cited *Nationwide Survey Sex-Offender Treatment Programs.*]

[46]M. Serber and J. Wolpe, "Behavior Therapy Techniques," in H.L.P. Resnick and M.E. Wolfgang (eds.), *Treatment of the Sex Offender* (Boston, MA: Little, Brown & Co., 1972), pp. 59-64.

the antiandrogen progesterone, a technique sometimes called chemical castration. Used in Europe for many years, hormonal manipulation has only recently been used in the American criminal justice system. The usual form is Depo-Provera.

A 1986 survey of 650 U.S. programs specializing in the treatment of sex offenders found that 14 percent of the adult programs and 6 percent of the juvenile programs were using Depo-Provera on an experimental basis.[47] Their goal is to determine if it, in conjunction with extensive counseling, could reduce the probability of recidivism.

Testosterone, found in varying levels in both men and women, is the sex hormone responsible for the male sex drive. Male sexual behavior is related to many variables, only one of which is the serum level of testosterone. But variations from the normal range of testosterone concentration are frequently associated with behavior changes; a reduction in the hormone due to castration may reduce sexual activity and conversely, an injection of testosterone to androgen-deficient men can increase sexual activity.[48]

The first clinical use of antiandrogen compounds to treat sexual offenders occurred in West Germany and Switzerland in the 1960s.[49] Experimenting with rats, scientists discovered the antiandrogenic properties of cyproterone and cyproterone acetate, and began applying the new drug to selected human beings. The compounds were found to suppress the production of testosterone. In contrast to estrogen compounds,[50] which in the male produce effeminate body changes and may cause irreversible infertility, cyproterone and cyproterone acetate are progesterone derivatives that have fewer unpleasant side effects, most reversible, and no known permanent adverse side effects.[51]

The drug was approved in the United States for several medical applications, but the Food and Drug Administration has not released it for general treatment of sexually deviant behavior. It has been possible, however, for researchers working with sex offenders to substitute medroxyprogesterone acetate, a synthetic progesterone known as Depo-Provera, manufacturered by the Upjohn Co.

Effective treatment with Depo-Provera depends on careful selection of candidates.[52] The personal commitment of the patient is important. Patients typically receive a 300 to 400 mg. injection of the drug every 7 to 10 days, depending on physique and body weight. The drug is regularly monitored in an attempt to lower the amount of testosterone from normal male levels (400 to 1,000 mg) to normal female levels (40 to 100 mg),[53] with the objective of reducing potency and ejaculation, reducing the frequency of erotic imagery, and diminishing sexual interest. Behavioral and cognitive therapies are almost always part of the treatment.[54]

In contrast to other, more traditional forms of treatment (e.g., psychotherapy, behavior therapy, long-term institutionalization, or antipsychotic chemotherapy), Depo-Provera is said to be more specific and longer-lasting in eliminating sexually dangerous behaviors.[55] There is also some evidence indicating that lowered

[47]Nationwide Survey of Sex-Offender Treatment Programs, see note 142, reported in *Criminal Justice Newsletter* 17 (June 16, 1986), p. 6.

[48]Kelly and Cavanuagh, "Sexually Dangerous," op. cit., footnote 43, p. 103.

[49]J. Money, "The Therapeutic Use of Androgen-Depleting Hormones," in H.L.P. Resnick and M.E. Wolfgang (eds.), *Treatment of the Sex Offender*, see note 143, p. 165. [Hereinafter cited "Therapeutic Use"]

[50]Estrogen is the main female sex hormone.

[51]M.K. Spodak, Z.M. Falk, and J.R. Rappeport "The Hormonal Treatment of Paraphiliacs With Depo-Provera," *Criminal Justice and Behavior* 5 (1978), pp. 304-314.

[52]Walker and Meyer, "Medroxyprogesterone Acetate for Paraphiliac Sex Offenders," 1981.

[53]Kelly and Cavanuagh, "Sexually Dangerous," op. cit., footnote 43, p. 104. Research also suggests that some offenders have excessively high levels of testosterone. Berlin and Meinecke, "Treatment of Sex Offenders," op. cit., footnote 42, p. 605; P. Gagne, "Treatment of Sex Offenders With Medroxyprogesterone Acetate," *American Journal of Psychiatry* 138, May 1981, p. 645.

[54]With counseling only, the patient often becomes discouraged as a result of relapses into deviant behavior. With counseling and Depo-Provera there are almost immediate behavioral changes, thus increasing the effectiveness of psychological therapy.

[55]Kelly and Cavanaugh, "Sexually Dangerous," op. cit., footnote 43, p. 102.

testosterone levels may decrease aggressiveness.[56] Other researchers have found that Depo-Provera does not affect aggression per se, but reduces sex-related aggression.[57] There are several theories, but as yet no conclusive evidence, to explain the multiple biochemical and clinical effects of Depo-Provera.

The Biosexual Psychohormonal Clinic at the Johns Hopkins University Hospital in Baltimore, Maryland, was one of the first programs to treat sex offenders with Depo-Provera, in the late 1960s. In 1982-83, the program treated approximately 150 sex offenders, mostly as a condition of probation.[58] Program research suggests that Depo-Provera, when combined with counseling, can reduce the risk of recidivism.[59] But when medication is stopped, recidivism may recur. The drug has been effective with paraphiliacs (i.e., those requiring bizarre imagery, voyeurs, sex masochists, pedophiles, etc.), but does not work well with "antisocial career ciminals."

New research at the sex offender program of the Connecticut Department of Corrections has indicated that Depo-Provera is unsuitable for most rapists because of their violent behavior, which is "primarily the sexual expression of aggression, rather than the aggressive expression of sexuality."[60] Other research indicates that it is not effective with alcohol and drug abusers.

The drug has several possible side effects, including those that frequently accompany the use of oral contraceptives; that is, fatigue, depression, weight gain, change in the growth of body hair, nausea, elevated blood glucose, and headaches.[61] These side effects appear to be temporary and reversible when treatment is terminated. Within 6 to 12 months following the last administration of the drug, a man's testosterone level returns to its pretreatment level.[62] Some controversy regarding the drug's possible carcinogenic effects has been reported in research literature.[63]

At best, Depo-Provera is a temporary solution to sexually deviant behavior. With short-term use, a high percentage of relapse occurs after the drug is withdrawn. But as sex crimes are highly age correlated, Depo-Provera treatment administered over several years may reduce the likelihood of recidivism until the patient ages, or makes sufficient progress in behavioral therapy to control antisocial behavior.[64]

Alternative Techniques for Behavior Control

The questions raised about drug or hormonal therapy would also apply to other kinds of scientific behavior modification if and when they become available. The techniques popularly and loosely called brainwashing, and certain surgical procedures, including castration and lobotomy, have been suggested at various times, although there is little evidence that they would effectively control undesirable behavior. If techniques are developed that are

[56]Ibid., p. 103.

[57]Bradford, "The Hormonal Treatment of Sex Offenders," *Bulletin of the American Academy of Psychiatry and the Law* 11, 1983, p. 167, cited in Larry McFarland, "Depo Provera Therapy as an Alternative to Imprisonment," *Houston Law Review* 23, 1986, Note 114, p. 810. Bradford believes there is little evidence of a correlation between serum testosterone and aggression, although there is a highly complex relationship between aggression and various biological factors.

[58]Criminal Justice Newsletter 14 (Sept. 12, 1983), p. 3.

[59]These findings have been supported by the results of a similar program in Galveston, TX; the Rosenburg Clinic reports that 70 to 80 percent of the men treated with Depo-Provera in conjunction with psychological treatment did not repeat their offensive behavior. See *Houston Post*, June 29, 1985, at 4A, col.1.

[60]Criminal Justice Newsletter 15 (Feb. 15, 1984), p. 4. Also see N. Groth, *Men Who Rape: The Psychology of the Offender* (New York, NY: Plenum Publishing Corp., 1979).

[61]P. Gagne, "Treatment of Sex Offenders With Medroxyprogesterone Acetate," *American Journal of Psychiatry* 138, May 1981, p. 645; Kelly and Cavanaugh, "Sexually Dangerous," op. cit., footnote 43, p. 104.

[62]J. Money "Therapeutic Use," see note 143, pp. 166; Kelly and Cavanaugh, "Sexually Dangerous," op. cit., footnote 43, p. 104.

[63]Researchers opposing the use of Depo-Provera claim that high doses of medroxyprogesterone acetate have caused breast cancer in female dogs (See A. Rosenfield, et al., "The Food and Drug Administration and Medroxyprogesterone Acetate," *Journal of the American Medical Association* 249 (1983),pp. 2924-2925). Several other researchers, however, believe that these findings are inconclusive as to the carcinogenic effects the drug may have on human beings. Berlin and Meinecke, "Treatment of Sex Offenders," op. cit., footnote 42, see note 139, p. 603; A. Liang, et al., "Risk of Breast, Uterine Corpus and Ovarian Cancer in Women Receiving Medroxyprogesterone Injections," *Journal of the American Medical Association* 249 (1983), p. 2909.

[64]Berlin and Meinecke, "Treatment of Sex Offenders," op. cit., footnote 42.

proven effective, however, these questions will certainly be raised.

Thus, some critics challenge any behavior modification treatments as "cruel and unusual punishment," which is prohibited by the Eighth Amendment. The courts have interpreted this clause to ban punishments involving torture or a lingering death,[65] and those that are disproportionately severe.[66] Courts have applied the proscription at various times to capital punishment,[67] corporal punishments,[68] and degrading conditions of confinement.[69]

It has also been applied to use of "aversion stimuli" in the form of an unproven drug that caused vomiting, when used to punish inmates or unvoluntarily committed patients who violated minor institutional rules.[70] A prisoner who undergoes treatment must consent, and must be able subsequently to withdraw consent and halt treatment.

The nature of the treatment, and what it does to the subject, is clearly relevant. For example, the effects should not be "shocking to the conscience of reasonably civilized people," a test that has been applied in determining what constitutes cruel and unusual treatment.[71] Surgical or pharmaceutical treatment that deprived a prisoner of the use of general mental faculties (i.e., made him a passive "zombie") or of physical faculties (i.e., crippled, blinded, or permanently castrated him) might be found to be "shocking to the conscience of reasonably civilized people"; but courts have allowed lobotomies to be performed on involuntarily committed patients.

Another general question that could arise, however, is whether a prisoner could demand treatment as an alternative to prison or if it affords an improved chance at probation. Should certain treatments prove effective and reliable methods for reducing violent behavior or propensity to rape or other sexual offenses, for example, prisoners may demand such treatment on grounds of "equal protection" or as medical care to which they are entitled. The Supreme Court has ruled that prison officials are obligated to provide inmates with adequate medical care.[72] The constitutional duty stems from the inmates' total dependence on prison officials to provide for their medical needs. The Court established a two-pronged test. Prison officials have violated the Eighth Amendment if: 1) the prisoner has serious medical needs, and 2) by an act or omission, officials have demonstrated deliberate indifference to those needs.[73] This requirement would not apply to experimental or unconventional treatments.

The suggestion that Depo-Provera, still considered experimental, could involve such long-term risks has led some critics to object to it. An opponent of Depo-Provera treatment protested,

> It makes a mockery of the whole concept of informed consent when your option is to go

[65]In re *Kemmler*, 136 U.S. 436 (1889), at 447: "Punishments are cruel when they involve torture or a lingering death; but the punishment of death is not cruel, within the meaning of that word as used in the Constitution. It implies there's something inhuman and barbarous, something more than the mere extinguishment of life."

[66]*Weems v. United States*, 217 U.S. 349 (1910): a sentence of 15 years at hard labor in wrist and ankle chains is disproportionate to the crime of falsifying a public record. *Coker v. Georgia*, 433 U.S. 584 (1977): the death penalty for the crime of forcible rape is grossly disproportionate and excessive, in violation of the Eighth Amendment. *Solem v. Helm*, 463 U.S. 277 (1983): a life sentence without possibility for parole for seventh nonviolent felony is significantly disproportionate to the crime and is thus a violation of the Eighth Amendment. But compare *Rummel v. Estelle*, 445 U.S. 263 (1980): a mandatory life sentence imposed under a recidivist statute does not constitute cruel and unusual punishment, even though the three successive felonies were nonviolent, property-related offenses.

[67]*Furman v. Georgia*, 408 U.S. 238 (1972)

[68]*Jackson v. Bishop*, 404 F. 2d 571 (8th Cir. 1968) [Whippings administered with a leather strap.]

[69]*Holt v. Sarver*, 309 F. Supp. 362 (E.D. Ark. 1970), aff'd 442 F.2d 304 (8th Cir. 1971) [The totality of conditions of confinement within an institution may amount to cruel and unusual punishment "where the confinement is characterized by conditions and practices so bad as to be shocking to the conscience of reasonably civilized people . . ." p. 365.

[70]Knecht v. Gillman, 488 F.2d 1136 (8th Cir. 1973).

[71]Holt v. Sarver, 309 F. Supp. 362 (E.D. Ark. 1970)

[72]Estelle v. Gamble, 429 U.S. 97 (1976) [Deliberate indifference by prison personnel to a prisoner's serious illness or injury constitutes cruel and unusual punishment contravening the Eighth Amendment.]

[73]Ibid., pp. 104-105.

to jail or get injected with a carcinogen that can increase the risk of heart attack.[74]

The American Civil Liberties Union has protested the conditions under which sex offenders usually participate in the program, arguing that it is an indirect form of coercion[75] because, for sex offenders especially, prison can be so dangerous as to force them to accept any alternative.

The courts have not established a clear doctrine on refusal of treatment even when it is intended to be rehabilitative.[76] At present, Depo-Provera is typically used in conjunction with other psychotherapeutic or behavioral treatments as a condition for probation. The defendant, in agreeing to the conditions, is considered to have waived his constitutional rights.

Critics have said that since research has demonstrated that Depo-Provera also reduces aggression, some prison administrators might attempt to use the drug on all inmates in an effort to control violence and homosexual activity. In fact, at least one criminal justice official has advocated such use.[77] Such broad and general use of the drug might meet the Supreme Court's test for cruel and unusual punishment: "shocking to the conscience of reasonably civilized people."[78]

[74]Criminal Justice Newsletter 14, Sept. 12, 1983, p. 3, Comments of Dr. Sidney Wolfe, Director of the Health Research Group.

[75]Criminal Justice Newsletter 14 Sept. 12, 1983 p. 3.

[76]Compulsory treatment was not held violative of Eighth Amendment in *Rutherford v. Hutto*, 377 F. Supp. 268 (E.D. Ark. 1974). [Prison officials compelled, under threat of institutional punishment, an illiterate inmate to attend school.] The court noted, "if a State can compel a convict to perform uncompensated labor for the benefit of the State, as can constitutionally be done [citation omitted], a fortiori a State has the constitutional power to require a convict to participate in a rehabilitation program designed to benefit the convict." Ibid., p. 272. Also see *Rennie v. Klein*, 462 F. Supp 1131 (D.N.J. 1978). For a review of the right to refuse treatment, see Comment, "The Right Against Treatment: Behavior Modification and the Involuntarily Committed," *Catholic University Law Review*, 23, 1974 p. 774.

[77]Comments of Oklahoma Corrections Director, Larry Meachum, who "would like to see Oklahoma become a 'frontrunner' in studying the use of 'chemical castration' to control sex offenders in overcrowded prisons," Quoted in, Comment, "Medical Treatment for Imprisoned Paraphiliacs: Implementing a Modified Standard for Deliberate Indifference," *Yale Law & Policy Review* 4 (1985), p. 251, at p. 275, note 106.

[78]*Holt v. Sarver*, 309 F. Supp. 362 (E.D. Ark. 1970)

Chapter 5

Technology for Record Keeping and Information Sharing

The criminal justice system relies on information at each stage of the process. The information processing system has two primary roles:

1. processing offender-relevant data (i.e., individual criminal records) in support of criminal justice decisions; and
2. processing system-relevant data in support of management and administrative decisions (e.g., manpower allocation and case load projections).

This report, however, deals only with the first of these roles. In this regard, criminal justice officials have sought technologies that will improve:

- the collection, maintenance, processing, and analysis of information;
- the communication or dissemination of data; and
- the quality, accuracy, completeness, and reliability of the data.

Criminal justice decisions at every level are built on such information as the initial offense and arrest reports, which describe the nature of the crime and the characteristics of the victim, and the offender's criminal history record. The seriousness of the offense and the criminal history of the offender are critical to making informed decisions.[1] Contemporary sentencing and parole guidelines have especially brought to light the importance of the data quality, for it largely shapes the disposition an offender may receive at bail, sentencing, and parole release, and also impinges on the rights of those never convicted or even formally accused of crime.

Other things being equal, the more serious the offense, the greater the likelihood that the prosecutor will formally charge and prosecute the suspect, the judge will set a high bail or no bail with the suspect confined until trial, the judge will sentence to confinement, the prisoner will be housed in maximum security, and the parole board will deter release. But in addition, the more serious the offender's prior criminal record, the greater the probability of adverse decisions throughout the system. Given the importance of criminal history records, a central issue is the quality of those records. Recent studies have called into serious question both the completeness and accuracy of criminal history records.

[1]D. Black and A. Reiss, "Patterns of Behavior in Police and Citizen Transactions," *Studies in Crime and Law Enforcement in Major Metropolitan Areas* (Washington, DC: U.S. Government Printing Office, 1977); R. Friedrich, "The Impact of Organizational, Individual, and Institutional Factors on Police Behavior," Ph.D. dissertation, University of Michigan, 1977; J. Goldkamp, *Two Classes of Accused: A Study of Bail and Detention in American Justice* (Cambridge, MA: Ballinger, 1979); D.M. Gottfredson, C.A. Cosgrove, L.T. Wilkins, J. Wallerstein, and C. Rauh, *Classification for Parole Decision Policy* (Washington, DC: U.S. Government Printing Office, 1978); M.R. Gottfredson, "The Classification of Crime and Victims," Ph.D. dissertation, State University of New York at Albany, 1976; M.R. Gottfredson and D.M. Gottfredson, *Decisionmaking in Criminal Justice: Toward the Rational Exercise of Discretion* (Cambridge, MA: Ballinger, 1988); J. Hogarth, *Sentencing as a Human Process* (Toronto: University of Toronto Press, 1971); L.P. Sutton, *Variations in Federal Criminal Sentences: A Statistical Assessment at the National Level* (Washington, DC: U.S. Government Printing Office, 1978).

REPORTING AND DATA QUALITY

The completeness, accuracy, and reliability of such information became an important public policy issue in 1967 when the *Report of the President's Commission on Law Enforcement and the Administration of Justice* cited inadequate reporting and inaccurate data as a seri-

ous problem.[2] The commission suggested a national computerized repository to collect summary criminal history information.[3] Five years later, the National Advisory Commission on Criminal Justice Standards and Goals also called attention to the data-quality problem.[4] And, also in 1973, the General Accounting Office criticized sharply the reporting levels in State criminal history record systems, noting that many arrests and dispositions were not reported to the State central repositories.[5]

Fifteen years later, according to most sources, disposition reporting is still characterized as too little, too late. In addition, there are serious problems with the level of reported arrests and the accuracy of criminal history records. This is in spite of the fact that automation has brought about great improvements in data quality.[6] Automated systems make it more practical and economical to implement tracking, editing, and disposition monitoring systems, as well as transaction logs and other data-quality techniques.

Further, the telecommunications components of automated systems make the reporting of arrests and disposition easy, economical, and reliable. The Office of Technology Assessment, in a 1982 survey, found that automated State repositories achieved a significantly higher average arrest reporting rate (81.6 percent) than did nonautomated systems (71.8 percent). There was a similar difference for disposition reporting. Repositories using automated systems had a 70.6 percent average disposition reporting rate, while repositories using manual systems had a rate of 56.3 percent.[7]

While some jurisdictions have been able to design and operate systems with relatively high disposition reporting levels, others have not. Most States with good quality records police the quality of criminal history record data as it is entered into their systems, including uniform documentation, review and verification, and tracking systems. But many States have not adopted these procedures.

[2]The President's Commission on Law Enforcement and Administration of Justice, *The Challenge of Crime in a Free Society* (Washington, DC: U.S. Government Printing Office, 1967), pp. 244-271.

[3]President's Commission on Law Enforcement and Administration of Justice, *Task Force Report: Science and Technology* (Washington, DC: Government Printing Office, 1967), p. 75.

[4]U.S. National Advisory Commission on Criminal Justice Standards and Goals, *Report on the Criminal Justice System*, p. 114 (1973). See also T.J. Madden and H.S. Lessin, "Privacy: A Case for Accurate and Complete Criminal History Records," *Villanova Law Review* 22, pp. 1191, 1198.

[5]U.S. Congress, Office of Technology Assessment, *An Assessment of Alternatives for a National Computerized Criminal History System* (Springfield, VA: National Technical Information Service, 1982), p. 93 [Hereinafter cited OTA, *Alternatives for a National CCH*]. Also, D.L. Doenberg and D.H. Zeigler, "Due Process v. Data Processing: An Analysis of Computerized Criminal History Information Systems," *New York University Law Review* 55, (December 1980), p. 1158.

[6]P. Woodard, *State Criminal History Record Repositories: An Overview* (Sacramento, CA: SEARCH Group, Inc., forthcoming). [A report prepared for the Federal Bureau of Justice Statistics.]

[7]OTA, *Alternatives for a National CCH*, op. cit., see note 176, p. 94.

DISSEMINATION OF FBI CRIMINAL HISTORY RECORDS

The Federal Bureau of Investigation (FBI) is allowed to disseminate criminal history records to State and local officials for employment and licensing purposes; it may also disseminate criminal records to some private sector employers, including federally chartered or insured banks, parts of the securities industry, the futures trading industry, and the nuclear power industry, with some conditions and constraints.[8] Under a "one-year rule" established by the Justice Department in 1974, because of congressional concern about the dis-

[8]"The Dissemination of FBI Criminal History Records for Employment and Licensing Purposes," A Staff Report, reprinted in *Access to FBI Records for Employment and Licensing Purposes:* Hearings before the Subcommittee on Civil and Constitutional Rights of the House Committee on the Judiciary, 100th Cong., 1st sess., 1988.

semination of inaccurate records, the FBI may not disseminate any criminal record more than a year old unless it shows the disposition of the charge.

In September 1987, the FBI proposed that the one-year rule be eliminated. Opponents of the proposed change point out that the FBI's criminal history record, because it depends on voluntary submissions from States, is seriously lacking in completeness and accuracy. Approximately 50 percent of the arrest entries do not show the disposition of the case, and as much as 20 percent of the arrest-dispositional data that is shown may be erroneous. A report prepared by staff for use of the Subcommittee on Civil and Constitutional Rights of the House Committee on the Judiciary pointed out that fewer than half of arrests result in a conviction, and the subject is entitled to be presumed innocent.[9] Half of all requests for FBI criminal records are for employment and licensing purposes, and if an applicant for a job or a license is refused on the basis of an incomplete or erroneous FBI record, he or she may suffer a substantial penalty even though acquitted or even though the charge was dropped.

The congressional staff report noted that when an incomplete arrest record seems particularly relevant to employment being sought, the FBI can go back to the agency that submitted the record and inquire about its disposition; when it does make this effort, it receives disposition information within 3 days in 42 percent of the cases. The report therefore recommended that the one-year rule not be dropped, but that the FBI take steps to reduce to a minimum those cases where relevant criminal records must be withheld, by improving its procedures for obtaining disposition information.

[9]Ibid.

ELECTRONIC RECORDS AND DUE PROCESS

Virtually every court that has addressed the data-quality issue has found that criminal justice agencies have a duty to implement procedures reasonably designed to safeguard the accuracy and completeness of criminal history records. However, these courts have not unanimously, or clearly, articulated the source of this duty, the standards for establishing a breach of this duty, or the consequences of such breach.

The courts generally do not require criminal justice agencies to maintain or disseminate accurate records. Rather, the courts require them to adopt policies and procedures that are reasonably calculated to result in accurate records. If an agency fails to implement such procedures and if that failure causes some tangible harm to a person when records are used or disseminated, courts are likely to find a violation and provide the subject with a remedy.

A Federal court found in 1974 that a criminal justice agency has a positive duty to maintain criminal history records in an accurate and reliable manner.[10] Later that same year, the District of Columbia Court of Appeals strongly implied that any statutory authorization to collect and disseminate criminal history records inherently required the agency to collect and

[10]498 F.2d 1017, 1026 (D.C. Cir. 1974) (Menard II). This case chronicled Menard's 9-year struggle to remove his arrest record from FBI files, since he was released (by Los Angeles police) without being charged. Menard argued that because he had only been detained and not arrested the FBI was without authority to maintain a record of his encounter with the Los Angeles police. The Federal Court of Appeals for the District of Columbia stated that the FBI has a duty to be more than a "mere passive recipient" of records received from the State and local enforcement agencies, and also has a duty to carry out its record keeping operations in a reliable and responsible manner. Although the *Menard* court declined to speculate on the extent to which the U.S. Constitution requires the FBI to maintain accurate and complete records, the court did find that the Department of Justice's statutory authority to "acquire, collect, classify and preserve" criminal justice records under 28 U.S.C. 534 carries with it the responsibility to discharge this record keeping function reliably and responsibly and without unnecessary harm to record subjects. See also, Louis F. Solimine, "Safeguarding the Accuracy of FBI Records: A Review of *Menard v. Saxbe* and *Tarlton v. Saxbe*," *University of Cincinnati Law Review* 44, (1975), pp. 325, 327.

disseminate those records in an accurate manner.[11]

But the notion that the U.S. Constitution requires criminal justice agencies to maintain accurate and complete criminal records suffered a setback 2 years later. The Supreme Court, in *Paul v. Davis*,[12] 1976, held that a police chief could circulate a flyer to local merchants containing the names and photos of "active shoplifters" without running afoul of the subjects' constitutional rights. The Court said that the U.S. Constitution does not require criminal justice agencies to keep official files, such as arrest records, confidential. Moreover, even if dissemination of an official record under some circumstances could be of constitutional interest, tangible harm to the subject must be demonstrated before the dissemination could violate any constitutionally protected interest.

This decision did not address the question of whether the criminal justice agencies must maintain *accurate* criminal history records. But at least one Federal court has cited the 1976 decision as authority for arguing that subjects do not have constitutional interest in the handling of their criminal records. A Federal district court held that a person against whom charges were dropped shortly after his arrest had no constitutional interest that required the purging of the arrest entry from the FBI's files.[13]

Courts have continued to find that criminal justice agencies have a duty to make reasonable efforts to ensure the accuracy and completeness of criminal history records. It is unclear whether the legal basis for such a duty is constitutional. The same year the Supreme Court decided *Paul v. Davis*, for example, a Federal district court held that the FBI's failure to reflect an acquittal entered 27 months prior to the lawsuit constituted a breach of the FBI's duty to maintain accurate records.[14]

Again, the district court did not commit itself about whether this duty derived from the Constitution or from the FBI's record keeping statute. The court said that it felt no need to identify the source or extent of the FBI's duty because the record keeping activity at issue violated "even a minimal definition of FBI responsibility."[15]

A Federal district court looked to statutory law, the Federal regulations, the U.S. Constitution, and common law doctrines to support its determination that the administrator of the Rhode Island National Crime Information Center (NCIC) has a duty to establish reasonable administrative mechanisms designed to minimize the risk of inaccurate records.[16]

The courts have also pondered over the extent of the burden which the victim of such mistakes should carry in order to establish a breach of this duty. A California court said that a criminal justice agency does not have a duty to correct a record on the basis of an "unsubstantiated" claim that the record contains inaccurate or incomplete information.[17] The

[11] *Tarlton v. Saxbe* 507 F. 2d 1116, 1122, 1123 (D.C. Cir. 1974); this expanded the decision in *Menard*. The court implied that even in the absence of a statutory obligation, agencies have constitutional and common law obligations to ensure accuracy in the collection and dissemination of criminal justice information.

[12] 424 U.S. 693, 713 (1976); see also, M. Elizabeth Smith, "The Public Dissemination of Arrest Records and the Right to Reputation: The Effect of *Paul v. Davis* on Individual Rights," *American Journal of Criminal Law* 5 (January 1977), p. 72.

[13] *Rowlett v. Fairfax*, 446 F. Supp. 186, 188 (W.D. Mo. 1978). Moreover, the opinion criticized *Tarlton v. Saxbe* saying that *Tarlton* incorrectly implied that constitutional privacy and due process rights may give subjects an interest in the quality of data in their criminal history records.

[14] *Shadd v. United States*, 389 F. Supp. 721 (W.D. Pa. 1975), aff'd, 535 F. 2d 1247 (3rd Cir. 1976), cert. denied, 431 U.S. 919 (1977).

[15] Ibid., p. 721.

[16] *Test v. Winquist*, 451 F. Supp. 388, 394 (D.R.I. 1978). The plaintiffs brought a civil damage action against the East Providence police officers for deprivation of constitutional rights (false imprisonment) and for various State tort claims, including false imprisonment, libel and slander. The police officers, who had acted on out of date information, in turn, sued the regional administrator of the NCIC. The court decided that the arresting officers may, indeed, if found liable to the plaintiff, have a cause of action against the regional administrator of the NCIC for breach of a duty to provide accurate information. Whether this duty was established by statute, regulation, the U.S. Constitution or common law, the court did not specify.

[17] *White v. State* 95 Cal. Rptr. 175, 181 (Ct. App. 1971). The court denied a damage suit against the State repository for negligent record keeping and dissemination.

In some cases the courts have evidently blessed data quality settlements worked out by litigants. In those suits, the plaintiffs charged that they had been falsely arrested, based on inaccurate warrant information, thereby violating their constitu-

plaintiff must be able to demonstrate this, the court said, on some objective basis.

The courts have also considered the question of who is responsible for requesting that the FBI correct or amend State or local records held by the FBI. Consistently, courts have placed this burden on the subject of erroneous or inaccurate records, rather than on the agencies that collect, keep, use, and disseminate them.[18] In the absence of a specific statutory command to maintain accurate and complete records, a person must demonstrate some harmful use or dissemination of his or her records to have much chance of obtaining judicial relief.

If one can demonstrate the dissemination or use of inaccurate or incomplete criminal history records, an injunction can be obtained requiring the inaccurate or incomplete information to be corrected or expunged.[19] An agency may also be subject to an action under the Civil Rights Act (often called "Section 1983 Actions").[20] Section 1983 gives individuals the right to bring an action for deprivation of their Federal constitutional rights caused by persons acting under State authority. However, those bringing an action must surmount several legal hurdles. One must be able to demonstrate that the agency violated one's constitutional rights and that some tangible harm occurred as a result. One may still be unable to recover damages if the government can demonstrate that the State or local official acted reasonably and in good faith. The courts have generally held that the outcome depends on whether the agency made reasonable efforts to establish a record keeping system designed to safeguard against errors.

The most frequent result of a breach of an agency's duty to maintain accurate and complete criminal history information is a finding by a court that an arrest or search based on erroneous information is illegal. Virtually all such decisions find that a constitutional violation occurs as part of an improper arrest or search; that is, it does not rest directly on use of inaccurate or incomplete records, but an agency's breach of its duty to disseminate accurate and complete records may result in improper arrests or searches. An arrest made solely on the basis of an inaccurate NCIC entry, uncorrected for 5 months, was found to be a deprivation of liberty without due process of law. Therefore, any evidence seized as a result of such an arrest had to be suppressed.[21]

Numerous other decisions have ordered the suppression of evidence obtained during the course of arrests based on mistaken information in an outstanding warrant file or in other types of criminal justice files. The courts have not set definitive rules on how much time lag

tional and civil rights. The settlement agreements reportedly set forth specific data quality procedures and criteria which the criminal justice agency must follow to ensure the accuracy of warrant files. D. Olmos, "Civil Rights Issues Fuel L.A.'s Warrant System Changes," *Computerworld*, Oct. 29, 1984, p. 10; D. Raimondi, "False Arrests Require Police To Monitor Systems Closely," *Computerworld*, Feb. 25, 1985, p. 23.

[18]The Sixth Circuit held in *Pruett v. Levi*, 622 F.2d 256, 258 (6th Cir. 1980), that a subject did not have a basis to sue the FBI merely because the FBI had refused to act on his generalized claim that the FBI was holding an inaccurate, locally generated criminal history record. He must first direct his claim to the appropriate State or local law enforcement agency, and if still aggrieved he may then direct a specific claim to the FBI. The Sixth Circuit also observed in *Pruett* that a simple claim that an agency is maintaining an inaccurate record, without alleging a specific, adverse effect from the use or dissemination of the record, does not, in light of the Supreme Court's decision in *Paul v. Davis*, create a cause of action. In *McKnight v. Webster*, 499 F. Supp. 420, 422 (E.D. Pa. 1980), a Federal district court set forth a slightly more detailed procedure for plaintiffs to follow in attempting to compel the FBI to correct allegedly inaccurate or incomplete criminal history records. A Federal prisoner, sought expungement of allegedly incomplete records maintained by the FBI and the local police. The court found that the FBI is not required to correct inaccuracies in State or locally created records unless the corrected information is supplied to it by the law enforcement agency, but does have an obligation to forward a request for correction of records to the appropriate State or local law enforcement agency. See also, *Hollingsworth v. City of Pueblo*, 494 F. Supp. 1039, 1040 (D. Colo. 1980), for the same result.

[19]L.N. Mullman, "*Maney v. Ratcliff*; Constitutional Law; Fourth Amendment; Computerized Law Enforcement Records," *Hofstra Law Review* 4 (1976), p. 881, p. 884.

[20]42 U.S.C. 1983. This section of the Civil Rights Act reads as follows: "Every person who, under color of any statute, ordinance, regulation, custom or usage, of any state or territory, subjects, or causes to be subjected, any citizen of the United States or other person within the jurisdiction thereof to the deprivation of any rights, privileges or immunities secured by the Constitution and laws, shall be liable to the party injured in an action in law, suite in equity, or other proceeding for redress."

[21]*United States v. Mackey* 387 F. Supp. 1121, 1125 (D.Nev. 1975).

is permissible for the police, relying on out-of-date and therefore inaccurate information, to establish probable cause for an arrest or search. The growing use of computers to operate information systems seems to be encouraging courts to minimize allowable periods of delay.[22]

In judging the validity of an arrest or a search, the courts have used a standard that takes into account the good faith of the criminal justice agency as well as the officers in the field. Under *Whiteley v. Warden,*[23] the legality of an arrest must be evaluated not only on the basis of information used by the arresting officer, but also on information that was supplied to the officer. The accuracy and sufficiency of the data system must be considered. But when a warrant has been issued, an officer can rely on it unless it is objectively unreasonable to do so. Thus, arrests made under magistrate-issued warrants would be harder to challenge than arrests made without warrants.

On the other hand, in *People v. Ramirez,*[24] for example, a California court held that an arrest based solely on a recalled warrant was invalid and the fruits of a search incident to that arrest had to be suppressed. The court said that it is not enough for an officer in the field to rely on information communicated to him through "official channels." The test is the good faith of the law enforcement agency of which the officer is a part.

It is a well established principle of law that a defendant cannot be sentenced on the basis of materially false information. This principle applies to criminal history records that contain information relative to sentencing. Several courts have held that sentences based on false information from a defendant's criminal history record will result in the sentence being overturned and the defendant resentenced.[25]

The end result of all of these confusing precedents appears to be that neither law nor constitutional precedents have yet definitively adjusted to the information age. A criminal justice agency's duty to maintain or disseminate accurate and complete information has also been litigated in tort actions.[26] Thus, a fair reading of the case law suggests that as of the mid-1980's criminal justice agencies need not guarantee or ensure record accuracy, but have a duty to put in place a system that is reasonably designed to produce accurate and complete information. The courts, while more or less convinced of the existence of this duty, have not yet been clear as to whether its source is to be found in the U.S. Constitution. The many challenges to constitutional principles have not yet been resolved. The issue will no doubt reappear in court often in the years ahead.

[22]470 N.E.2d 1303 (Ill. 1984). In *Petterson v. United States*, 301 A.2d 67 (D.C. 1973), the court found that probable cause for an arrest existed when an officer relied on a list of stolen cars provided by a police radio dispatcher, which was, in turn, based on information from the National Crime Information Center's computer. The car at issue was reported stolen but had been recovered some 15 hours earlier, and the NCIC entry had not yet been updated to reflect the recovery.

[23]401 U.S. 560 (1971).

[24]194 Cal. Rptr. 454, 461 (1983).

[25]*United States v. Tucker*, 404 U.S. 442, 447 (1972).

[26]*Doe v. United States*, 520 F. Supp. 1200, 1202 (S.D.N.Y. 1981).

Chapter 6

Conclusions

New technologies are transforming every component of the criminal justice process and will potentially make law enforcement much more efficient and more effective. They also raise questions about how constitutional principles, especially those protections and rights found in the Fourth, Fifth, Sixth, Eighth, and Fourteenth Amendments, apply to people accused of or convicted of crime.

In investigating crimes, identifying suspects, and gathering evidence, technologies (especially electronic technologies and technologies based on the biological and social sciences) are changing the nature of police work. When police capabilities are enhanced, the possibility that those capabilities will be misused —either deliberately or inadvertently—is also increased. Lawmakers and courts may need to reexamine both the scope of constitutional limitations on police power and their application to particular activities and procedures.

Electronic surveillance technologies have repeatedly challenged the scope of protection against "unreasonable searches and seizures" (Fourth Amendment) because information is no longer necessarily embedded in "persons, places, papers, and effects" as it was in 1787, and because technology repeatedly modifies what the Supreme Court has called "a reasonable expectation of privacy." Biological technologies promise to raise similar questions. Both remote sensing and "intimate sensing" (the testing of bodily conformations, fluids and tissues, or mental processes), as well as the aggregation or accessing of information in computer databases, have enormously expanded the capability of government to gather and use information about individuals. They may become more pervasive and more invasive in the future.

If nonlethal or less-than-lethal weapons, still generally unsatisfactory for most law enforcement purposes, become highly effective and reliable in the future, then the use of conventional weapons would almost certainly be challenged as an unnecessary or disproportionate use of force. What is judicially permissible and socially acceptable at one time has often been challenged when technology changes.

Throughout the criminal justice system, officials continually make decisions that require specialized knowledge, judgment, and discretionary choices. Arrests, pretrial release, sentencing, probation, and parole, for example, require complex choices. Social science research, statistical analysis, predictive models, simulation, expert systems, and other computer-assisted techniques are increasingly being used to aid those who must decide. More consistent decisions is one important objective, and this supports the constitutional values of due process and equal protection of the laws. At the same time, techniques that are derived from the study of groups and populations, when applied to individuals, may be challenged as potentially discriminatory.

There are currently strong and conflicting pressures to increase the rates of apprehension and punishment of offenders, on the one hand, and to alleviate the overcrowding of prisons on the other. This is leading to new emphasis on alternatives to prison, including privately run prisons, home arrest using electronic monitoring, and the "treatment" of antisocial and violent behavior by drug and hormone therapy. Some of these alternatives may be challenged on the grounds that they violate constitutional protections against cruel and unusual punishments or constitutional rights to privacy, due process, and equal protection. Yet to the extent that these alternatives are perceived as preferable to prison, they may be demanded on the grounds of equal protection of law or nondiscrimination.

As record keeping and sharing become an integral and ever more essential component of criminal justice, issues related to data quality and confidentiality become very important.

Repeated challenges to the legitimacy of civil justice administration have been made on these issues. Procedures can be built into or programmed into automated informations systems that greatly enhance the reliability, correctability, and confidentiality of data in criminal justice records, but many States and, in some cases, Federal agencies are not using these procedures. Courts have ruled that criminal justice agencies have a duty to implement such procedures, but they have not generally required agencies to keep and disseminate accurate data. In general, they still leave the burden of forcing agencies to correct information on the shoulders of the person about whom the data is collected. Neither law nor constitutional precedents in this area have yet accommodated to the problems and perils that accompany the benefits of the information age.

Many of the technological innovations reviewed in this report can offer significant social benefits, including the reduction of crime and the just and equitable administration of justice. Unfortunately, these same recent advances in technologies have also created the tools that may widen the net of social control, and have the effect of chilling the exercise of constitutional rights. That these technologies are well intended is not questioned. As Justice Brandeis noted nearly 60 years ago:

> Experience should teach us to be most on our guard to protect liberty when the Government's purposes are beneficent. Men born to freedom are naturally alert to repel invasion of their liberty by evil-minded rulers. The greatest dangers to liberty lurk in insidious encroachment by men of zeal, well-meaning but without understanding.[1]

Applying Justice Brandeis' admonition to the introduction of technology in a democratic society, government must of necessity establish protective boundaries within which new technologies will operate. Technology throughout history has been a double-edged sword, equally capable of improving or endangering a civilized world. The benefits of these technologies are clear and should not be lost through fear of potential abuses; those abuses can be avoided through the diligent attention of citizens, elected officials, the courts, criminal justice administrators, and practitioners of science and technology.

[1]Dissenting opinion of Justice Brandeis, *Olmstead v. United States*, 277 U.S. 438 (1928).

Appendix

Acknowledgments

Criminal Justice, New Technology, and The Constitution Workshop, Apr. 21, 1987

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